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MAY 06 2019

April 30, 2019

Office of Environmental Cleanup

Mr. Ravi Sanga
EPA Remedial Project Manager
U.S. EPA Region 10
1200 Sixth Avenue, ECL 111
Seattle, WA 98101

RE: Fabrication Area Groundwater Remedial Action Progress Summary – Year 2018

Dear Mr. Sanga:

Please find enclosed three (3) copies of the *Fabrication Area Groundwater Remedial Action Progress Summary – Year 2018*. An electronic version of the report is also included.

If you have any questions, please feel free to contact me at 541.812.7376.

Sincerely,

A handwritten signature in blue ink that appears to read "noel mak".

Noel Mak

NPL Program Coordinator

Enclosures: 1. *Fabrication Area Groundwater Remedial Action Progress Summary – Year 2018*

USEPA SF
A standard linear barcode.
1557205



Technical Memorandum

To: Noel Mak/ATI Millersburg Operations

From: Renee Fowler/GSI Water Solutions, Inc.
Matt Kohlbecker/GSI Water Solutions, Inc.
Kathy Roush/GSI Water Solutions, Inc.

Date: April 30, 2019

Re: **Fabrication Area Groundwater Remedial Action Progress Summary – Year 2018**

This technical memorandum (TM) documents the results of the groundwater monitoring and remedial action for the Fabrication Area from the spring and fall of 2018 at the ATI Millersburg Operations (Oregon) (ATI) facility, formerly ATI Wah Chang (Figure 1). Groundwater monitoring data before 2018 are included in the trend plots and in an attachment to this TM.

1. Background

The Fabrication Area is approximately 50 acres in size and is the portion of the ATI facility where zirconium sponge and recycled material are consolidated into a finished product. During the remedial investigation in 1992, chlorinated volatile organic compounds (CVOCs), polychlorinated biphenyls, nitrate, ammonia/ammonium, and fluoride were identified in soil and groundwater in the Fabrication Area. Additional site investigations near Structures S-186 and S-176 in the Former Crucible Cleaning Area (FCCA) and Fabrication Acid Sump Courtyard confirmed additional CVOCs in soil and groundwater. The locations for groundwater contaminants historically have been described as the following:

- Acid Sump-Thermite Building Area: CVOCs, fluoride, nitrate
- Ammonium Sulfate Storage Area: CVOCs, ammonia/ammonium
- Arc Melting (FCCA): CVOCs
- Dump Master Area: CVOCs
- Material Recycle Area: CVOCs

The Fabrication Area groundwater remedy includes a groundwater extraction treatment system (GETS) consisting of six wells: FW-1, FW-2, FW-3, FW-4, FW-5, and FW-7 (Figure 1). In 2009, FW-7 was taken out of service after the U.S. Environmental Protection Agency (EPA) approved a request to terminate pumping operations at FW-7. Extracted groundwater from operating wells (excluding FW-5) is sent to the ATI process water cooling towers, which function as an air

stripping tower to volatize the CVOCs. Discharge from FW-5 is treated in the Ammonia Recovery System.

Beginning in 2009, ATI began implementing remedial actions using enhanced in situ bioremediation (EISB) at the Acid Sump Area and FCCA (in 2010). ATI provided progress updates in the 2011 bimonthly reports, and a performance assessment for the Acid Sump Area EISB remedy was included in the 2011 annual report to EPA. A separate report, detailing the results of performance monitoring of EISB activities in the FCCA, was provided to EPA in early 2013; the report contained a portion of the 2012 performance monitoring data (GSI, 2013). Complete analytical results have been included in the annual reports since 2012. The 2018 performance monitoring results for the Acid Sump Area and FCCA are included in this annual report as attachments.

In 2016, under an EPA-approved work plan (GSI, 2016a), ATI excavated an area approximately 31 feet wide by 25 feet long by 16 feet deep in the Acid Sump Area to remove a 1,1,1-trichloroethane (TCA) source area. Soil was removed down to the impermeable Spencer Formation and alkaline-activated persulfate (Klozur™ by Peroxy Chem) was applied during backfilling. An excavation construction report outlining the results of the work was submitted to EPA in May 2017 (GSI, 2017).

In addition to the implemented remedial actions, institutional controls protect human health by preventing the installation of drinking water wells at the facility (EPA, 1994).

Progress in the Fabrication Area groundwater remedial action has been reported routinely to EPA and the Oregon Department of Environmental Quality (DEQ) since GETS startup, between April and August 2001. Additional documents that outline the groundwater extraction program and remedial actions at the Fabrication Area include:

- *Field Sampling Plan for the Wah Chang NPL Program* (CH2M HILL, 1997)
- *Fabrication Area Groundwater Construction Report* (CH2M HILL, 2001)
- *Fabrication Area Groundwater January through June 2002 Remedial Action Progress Report* (CH2M HILL, July 2002)
- *Fabrication Area Groundwater July through December 2002 Remedial Action Progress Report* (CH2M HILL, January 2003)
- *Fabrication Area Groundwater Year 2003 Remedial Action Progress Report* (CH2M HILL, February 2004)
- *Fabrication Area Groundwater 3-year Evaluation Report* (CH2M HILL, 2005)
- *Addendum to the Fabrication Area Groundwater 3-year Evaluation Report* (CH2M HILL, 2005)
- *Fabrication Area Groundwater Year 2006 Remedial Action Progress Report* (CH2M HILL, February 2007)
- *Fabrication Area Groundwater Year 2007 Remedial Action Progress Report* (CH2M HILL, April 2008)
- *Acid Sump Area Soil and Groundwater Investigation Data Report* (CH2M HILL and Wah Chang, 2008)
- *Soil and Groundwater Investigation Results for the Former Crucible Cleaning Area* (CH2M HILL, 2008)
- *Fabrication Area Groundwater Year 2008 Remedial Action Progress Report* (GSI Water Solutions, Inc., March 2009)

- *Fabrication Area Groundwater Year 2009 Remedial Action Progress Report* (GSI Water Solutions, Inc., March 2010)
- *Fabrication Area Groundwater Year 2010 Remedial Action Progress Report* (GSI Water Solutions, Inc., August 2010)
- *Acid Sump Source Area Enhanced In Situ Bioremediation Project and Performance Summary, Fabrication Area, ATI Wah Chang Facility, Albany Oregon* (GSI Water Solutions, Inc., September 2011)
- *Fabrication Area Groundwater Year 2011 Remedial Action Progress Report* (GSI Water Solutions, Inc., November 2012)
- *Former Crucible Cleaning Area Enhanced In Situ Bioremediation Project and Performance Summary, Fabrication Area, ATI Wah Chang Facility, Albany, Oregon* (GSI Water Solutions, Inc., March 13, 2013)
- *Acid Sump Area Source Area Remedial Design Work Plan, ATI Wah Chang Facility, Albany, Oregon* (GSI Water Solutions, Inc., April 24, 2015)
- *Fabrication Area Groundwater Year 2012-2013 Remedial Action Progress Report* (GSI Water Solutions, Inc., July 10, 2015)
- *Fabrication Area Groundwater Year 2014 Remedial Action Progress Report* (GSI Water Solutions, Inc., October 15, 2015)
- *Fabrication Area Groundwater Year 2015 Remedial Action Progress Report* (GSI Water Solutions, Inc., October 18, 2016)
- *Sitewide Groundwater and Surface Water Sampling Results – 2016, Revised* (GSI Water Solutions, Inc., March 2018)
- *Fabrication Area Groundwater Remedial Action Progress Summary – Year 2016-2017* (GSI Water Solutions, Inc., December 19, 2018)

The reader is directed to these references for additional information and historical remediation activities. Historical groundwater monitoring data previously reported for the Fabrication Area are presented in this TM to assess concentration trends and remedial action progress since the GETS startup in 2001. Historical groundwater quality data for the Fabrication Area for the past 10 years are included in Attachment A. Attachment B presents performance monitoring results in the Acid Sump Area since the 2009 EISB project. Attachment C shows the performance monitoring results in the FCCA since the EISB project in 2010. A list of acronyms is provided in Attachment D. Attachment E presents a summary of the well construction details of the Fabrication Area wells.

2. Operation Summary

For approximately 17 years, ATI has been operating the GETS. Since system startup and through 2018, the GETS has recovered 1,046 pounds of CVOCs and 240,208 pounds of ammonia from 230.4 million gallons (MG) of extracted groundwater. Average extracted volumes by month at each well from 2002 to 2018 are shown in Table 1. Groundwater extraction is interrupted only to conduct routine maintenance and when unanticipated mechanical or electrical problems occur.

Operations Data

This section presents the groundwater extraction rates and estimated contaminant mass removal based on observed CVOC and inorganic parameter concentrations.

Extraction Pumping Volumes

The total volume of groundwater pumped from the Fabrication Area wells in 2018 was 14.1 MG. Typically, extraction well FW-2 extracts the greatest volume of groundwater, but extracted only 2.8 MG in 2018 because of issues with the electric pump. ATI is considering converting to a pneumatic pump, similar to the rest of the extraction wells, to increase the recovery volume. However, extraction well FW-5 removed 5.0 MG in 2018 and extraction well FW-1 removed 4.9 MG in 2018. The fewest number of gallons in 2018 was removed from FW-4 (0.7 MG). Average monthly extraction rates from 2002 to 2018 are presented in Table 1.

Extraction Influent Total CVOC Concentrations and Recovery Rates

Total CVOC concentrations at each extraction well in 2018 are shown in Table 2. Total CVOC concentrations in extraction wells were higher during the fall than the spring, with the exception of extraction wells FW-2. Extraction well FW-1 was not sampled in the first half of 2018 because of mechanical issues; those issues were remedied. Figure 2 shows total CVOC concentrations in extraction wells from 2002 to 2018. Total CVOC concentrations have exhibited a declining trend during the course of GETS operation.

Inorganic Compound Concentrations

In 2018, concentrations of ammonium exceeded the cleanup standard (250 milligrams per liter [mg/L]) in the spring sample from extraction well FW-5. Ammonium concentration fell to 215 mg/L in the fall sample (below the cleanup standard). Ammonium concentrations at other sampled extraction wells were below the cleanup standard. Analytical details are presented in the bottom section of Table 2.

The 2018 spring sample from extraction well FW-3 exceeded the cleanup standard of 4 mg/L for fluoride. The fluoride concentration decreased at extraction well FW-3 to 2.9 mg/L in the fall sample (below the cleanup standard). Fluoride concentrations in other sampled extraction wells were below the cleanup standard.

Nitrate concentrations at extraction well FW-3 (the only extraction well that is sampled for nitrate) remained relatively stable at less than 1 mg/L in the 2018 spring and fall samples. The nitrate concentrations were significantly below the cleanup standard of 10 mg/L.

Utilities and Consumables

Air and electricity used to operate the system are not monitored. Primary and secondary filters at extraction well FW-1 are changed periodically.

3. Performance Summary

Monitoring Activity

Synoptic groundwater levels were measured at 72 monitoring wells in the Fabrication Area during each 2018 monitoring event. Groundwater quality samples were collected at 53 monitoring wells, 6 extraction wells, and 5 surface water locations in Murder and Truax Creeks.

Refer to Table 3 for details of the groundwater monitoring program (i.e., wells that were sampled and groundwater parameters that were analyzed).

Water Level Monitoring

The depth-to-water measurements and the calculated groundwater elevations from the 2018 spring and fall monitoring events are shown in Table 4. Groundwater contour maps of spring groundwater elevations are presented in Figure 3 and fall groundwater elevations are presented in Figure 4. Under non-pumping conditions, a groundwater divide is present, trending east-west from Cell 3 to the Acid Sump Area to the Arauco Facility. Groundwater flows north-northwest from the divide toward Murder Creek and south-southwest toward Truax Creek. Groundwater levels were measured with extraction wells pumping, and groundwater flow directions show groundwater flow converging toward the extraction wells. In general, the groundwater contours and flow directions in 2018 were similar to those observed in previous years.

Operating extraction well groundwater elevations were not included for contouring groundwater elevations. However, FW-6, which has no extraction pump, continued to be used as a replacement for monitoring well PW-10. Water levels from monitoring wells PW-10, PW-12, PW-69A, PW-72A, PW-73A, and PW-74A were not used for contouring groundwater. Explanations for not including water levels believed to be unrepresentative of the water table in these wells are provided in the notes in Figures 3 and 4.

Quality Control Program

Groundwater monitoring in 2018 was completed in conformance with the quality assurance project plan (QAPP; GSI, 2015). All samples were immediately placed in iced coolers and maintained under chain-of-custody protocols. ATI or GSI Water Solutions, Inc. (GSI), personnel delivered samples to the laboratory (Apex Laboratory in Tigard, Oregon) during collection periods.

Duplicate samples for field quality control (QC) were collected at a frequency of 5 percent of the samples collected during the event. All duplicate samples were collected at the same time as the parent sample, and were blind-labeled and delivered to Apex with the normal shipment. Matrix spike and matrix spike duplicate samples also were collected at a frequency of 5 percent and when potential changes in the sample matrix were anticipated because of previous sampling results. Apex provided the use of approved analytical methods according to the QAPP, analytical data package deliverables, and conformance with the laboratory's quality assurance (QA) manual.

Field and laboratory data were subjected to a formal verification and validation process in accordance with EPA guidance documents, as described in the QAPP. An external party, as defined in EPA's *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (EPA, 2009), QA/QC Solutions, LLC, performed the data validation to determine the usability of the data for meeting project objectives. An abbreviated validation review (i.e., a summary review of the results reported) was performed on 90 percent of the data and a more comprehensive validation review was performed on 10 percent of the data, as described in Section D.1 of the QAPP.

Data qualifiers were assigned during data validation to the electronic data deliverables (EDDs) when applicable QA and QC limits were not met and the qualification was warranted following guidance specified by EPA (EPA, 2002, 2008, and 2010), QC requirements specified in the QAPP, and method-specific QC requirements, as applicable. Final, qualified (as necessary) laboratory results were transmitted in EDDs for data management, further evaluation, and reporting.

After verification and validation of the field and laboratory data, as described above, data completeness was calculated by comparing the total number of acceptable data (non-rejected data) to the total number of data points generated. Overall, completeness for the 2018 monitoring events was 100 percent (i.e., no data were rejected).

Groundwater Quality Results

Semiannual groundwater monitoring in the Fabrication Area was conducted for analysis as shown in Table 3. Field parameters recorded at the completion of well purging and prior to groundwater sample collection are shown in Table 5.

Cleanup Standard Exceedances

Since the beginning of groundwater extraction in the Fabrication Area in 2001, the number of wells with CVOC concentrations exceeding cleanup standards has decreased. Analytical data and trends are presented in the following materials:

- A summary of the monitoring wells that exceeded cleanup standards for CVOCs in 2018 is shown in Table 6.
- Concentration trends for all monitoring wells that had any cleanup standard exceedance in the last 5-year period (2014 through 2018) are presented in Figures 5A through 9C. These figures are discussed in the sub-area synopses below.
- The distribution of 1,1-dichloroethene (DCE) and vinyl chloride (VC) across the Fabrication Area as a whole is shown in Figures 10 and 11, respectively.
- Historical groundwater quality results from the baseline event in 2000 and results from the past 10 years, including cleanup standard exceedances, are presented in tabular form in Attachment A.
- Groundwater quality results, including indicators of reductive dechlorination and cleanup standard exceedances for the Acid Sump Area and FCCA are presented in Attachment B and Attachment C, respectively. Data for both projects are from the year the EISB projects were initiated (Acid Sump Area in 2009, FCCA in 2010) to 2018.

Fabrication Area Sub-Areas

A summary of analytical results in 2018 for constituents of concern (COCs) in each sub-area of the Fabrication Area is presented in the following sections.

Acid Sump-Thermite Building Area

Performance monitoring in the Acid Sump Area following the 2009 EISB actions and 2016 excavation was continued in 2018. Groundwater samples were collected from 19 monitoring wells in the Acid Sump-Thermite Building Area, with the exception of well PW-16 in the fall of

2018 because of a nearby sewer line rupture at the time of the fall monitoring event. Figures 5A through 5F present groundwater quality trends for monitoring wells that exceeded any CVOC cleanup standard in the past 5-year period (2014 through 2018). Figures 5G and 5H present groundwater quality trends for monitoring wells that exceeded cleanup standards for fluoride and nitrate, respectively, during the same 5-year period. Performance monitoring results for the Acid Sump Area wells, including the temporary monitoring wells (TMWs) that are not part of the GETS monitoring well network for the Acid Sump Area, are presented in tabular form in Attachment B.

Sub-Area	<u>Acid Sump Area</u>
Number of Monitoring Wells	19
COCs	CVOCs and Inorganic Compounds (Fluoride and Nitrate)

CVOCs

TCA

Cleanup Standard	200 micrograms per liter ($\mu\text{g/L}$)
Wells Exceeding Standard	5 (EI-5, I-2, I-3, PW-12, PW-98A)
Previous Year	4 (EI-5, I-2, I-3, PW-98A)
Wells Below Standard	14 (E-11, FW-6, PW-10, PW-11, PW-13, PW-16A, PW-19A, PW-76A, PW-77A, PW-78A, PW-79A PW-80A, PW-82A, PW-99A)
Concentration Range	38,400 $\mu\text{g/L}$ (I-2) to 0.4 $\mu\text{g/L}$ U (PW-19A, PW-76A, PW-77A, PW-82A)
Trend Plots	Figure 5A
Analytical Data	Attachment A (Table A-1) and Attachment B

DCA (1,1-dichloroethane)

Cleanup Standard	3,700 $\mu\text{g/L}$
Wells Exceeding Standard	1 (I-2)
Previous Year	1 (I-2)
Wells Below Standard	18 (E-11, EI-5, FW-6, I-3, PW-10, PW-11, PW-12, PW-13, PW-16A, PW-19A, PW-76A, PW-77A, PW-78A, PW-79A PW-80A, PW-82A, PW-98A, PW-99A)
Concentration Range	17,600 $\mu\text{g/L}$ (I-2) to 0.4 $\mu\text{g/L}$ U (PW-19A, PW-76A, PW-82A)
Trend Plots	Figure 5B
Analytical Data	Attachment A (Table A-6) and Attachment B

PCE (tetrachloroethene)

Cleanup Standard	5 $\mu\text{g/L}$
Wells Exceeding Standard	2 (I-2, PW-98A)
Previous Year	4 (EI-5, I-2, I-3, PW-98A)
Wells Below Standard	17 (E-11, EI-5, FW-6, I-3, PW-10, PW-11, PW-12, PW-13, PW-16A, PW-19A, PW-76A, PW-77A, PW-78A, PW-79A PW-80A, PW-82A, PW-99A)
Concentration Range	29.0 $\mu\text{g/L}$ (I-2) to 0.4 $\mu\text{g/L}$ U (E-11, FW-6, PW-19A, PW-76A, PW-77A, PW-82A)
Trend Plots	Figure 5C

Analytical Data	Attachment A (Table A-4) and Attachment B
TCE (trichloroethene)	
Cleanup Standard	5 µg/L
Wells Exceeding Standard	5 (I-2, I-3, PW-12, PW-13, PW-98A)
Previous Year	8 (EI-5, I-2, I-3, PW-12, PW-13, PW-98A, PW-99A, plus extraction well FW-3)
Exceedances	
Wells Below Standard	14 (E-11, EI-5, FW-6, PW-10, PW-11, PW-16A, PW-19A, PW-76A, PW-77A, PW-78A, PW-79A PW-80A, PW-82A, PW-99A)
Concentration Range	84.5 µg/L (I-2) to 0.4 µg/L U (E-11, FW-6, PW-19A, PW-76A, PW-82A)
Trend Plots	Figure 5D
Analytical Data	Attachment A (Table A-3) and Attachment B
DCE	
Cleanup Standard	7 µg/L
Wells Exceeding Standard	13 (E-11, EI-5, I-2, I-3, PW-11, PW-12, PW-13, PW-77A, PW-78A, PW-79A, PW-80A, PW-98A, PW-99A)
Previous Year	12 (EI-5, I-2, I-3, PW-11, PW-12, PW-13, PW-77A, PW-78A, PW-79A, PW-98A, PW-99A, plus extraction well FW-3)
Exceedances	
Wells Below Standard	6 (FW-6, PW-10, PW-16A, PW-19A, PW-76A, PW-82A)
Concentration Range	3,050 µg/L (I-2) to 0.4 µg/L U (FW-6, PW-19A, PW-76A, PW-82A)
Trend Plots	Figure 5E
Analytical Data	Attachment A (Table A-2) and Attachment B
VC	
Cleanup Standard	2 µg/L
Wells Exceeding Standard	8 (EI-5, I-2, I-3, PW-12, PW-77A, PW-80A, PW-98A, PW-99A)
Previous Year	7 (EI-5, I-2, I-3, PW-12, PW-98A, PW-99A, plus extraction well FW-3)
Wells Below Standard	11 (E-11, FW-6, PW-10, PW-11, PW-13, PW-16A, PW-19A, PW-76A, PW-78A, PW-79A, PW-82A)
Concentration Range	682 µg/L (I-2) to 0.4 µg/L U (PW-19A, PW-76A, PW-79A, PW-82A)
Trend Plots	Figure 5F
Analytical Data	Attachment A (Table A-5) and Attachment B

CVOCs Concentration Overview

The 2018 performance monitoring revealed that despite falling concentrations of CVOCs in many Acid Sump Area wells subsequent to the EISB treatment in 2009 and the soil excavation in 2016, concentrations of many CVOCs remained above the cleanup standards. As much of the accessible TCA-contaminated material was removed as practical during source area excavation. It is reasonable to assume that TCA source material remained after the excavation under chemical tanks, permanent structures, and facilities located adjacent to the dig that could not be moved. Chemical treatment along the excavation walls and bottom was intended to degrade some of these materials.

Despite dramatically reduced concentrations of CVOCs in the contaminant plume since the EISB injections in 2009, groundwater quality data collected in 2018 suggest that a persistent source of dense nonaqueous-phase liquid (DNAPL) may exist in the Acid Sump Area. A criterion for DNAPL delineation is that groundwater concentrations exceeding 1 percent of a chemical's solubility in water may be indicative of DNAPL (EPA, 1992). Therefore, based on a TCA solubility in water of 1,290,000 µg/L (Horvath et al., 1999), groundwater concentrations exceeding 12,900 µg/L may be indicative of DNAPL. Specifically, TCA concentrations in monitoring well I-2 may indicate a DNAPL source.

Inorganic Compounds

Fluoride

Cleanup Standard	4 mg/L
Wells Exceeding Standard	8 (E-11, EI-5, FW-6, I-2, PW-10, PW-13, PW-98A, PW-99A)
Previous Year	8 (E-11, EI-5, FW-6, I-2, PW-10, PW-13, PW-98A, PW-99A)
Wells Below Standard	11 (I-3, PW-11, PW-12, PW-16A, PW-19A, PW-76A, PW-77A, PW-78A, PW-79A PW-80A, PW-82A)
Concentration Range	65.0 J-flag mg/L (PW-98A) to 0.1 mg/L U (PW-19A, PW-76A, PW-77A, PW-78A, PW-80A, PW-82A)
Trend Plots	Figure 5G
Analytical Data	Attachment A (Table A-9) and Attachment B

Nitrate

Cleanup Standard	10 mg/L
Wells Exceeding Standard	4 (I-2, I-3, PW-13, PW-98A)
Previous Year	1 (PW-98A)
Wells Below Standard	15 (E-11, EI-5, FW-6, PW-10, PW-11, PW-12, PW-16A, PW-19A, PW-76A, PW-77A, PW-78A, PW-79A PW-80A, PW-82A, PW-99A)
Concentration Range	20.0 mg/L (PW-13) to 0.25 mg/L U (EI-5, FW-6)
Trend Plots	Figure 5H
Analytical Data	Attachment A (Table A-7) and Attachment B

Inorganic Compounds Concentration Overview

Fluoride concentrations in approximately half of the Acid Sump Area wells have remained above the cleanup standard at about the same concentration during the past 5-year time frame (2014 to 2018). Monitoring wells I-2 and PW-98A exhibited an increase in the fall 2018 monitoring event.

Four wells exceeded the nitrate cleanup standard of 4 mg/L in 2018. The nitrate concentrations in wells I-3 and PW-13 have fluctuated above and below the cleanup standard during the past 5 years of groundwater monitoring.

Ammonium Sulfate Storage Area

Groundwater samples were collected from six monitoring wells in the Ammonium Sulfate Storage Area. From 2014 through 2018, no wells in the sub-area have exceeded the cleanup standards for TCA, DCA, or PCE (Attachment A). Figures 6A through 6C present groundwater quality trends for monitoring wells that exceeded cleanup standards for other CVOCs in the

past 5-year period (2014 through 2018). Figures 6D through 6F present groundwater quality trends for monitoring wells that exceeded cleanup standards for fluoride, nitrate, and ammonium, respectively, during the same 5-year period. Analytical results for all Ammonium Sulfate Storage Area wells are presented in Attachment A.

Sub-Area	<u>Ammonium Sulfate Storage Area</u>
Number of Monitoring Wells	6
COCs	CVOCs and Inorganic Compound (Ammonium)

CVOCs

TCE

Cleanup Standard	5 µg/L
Wells Exceeding Standard	2 (PW-84A, PW-89A)
Previous Year	2 (PW-84A, PW-89A)
Wells Below Standard	4 (PW-01A, PW-03A, PW-83A, PW-92A)
Concentration Range	46.5 µg/L (PW-84A) to 0.4 µg/L U (PW-83A, PW-92A)
Trend Plots	Figure 6A
Analytical Data	Attachment A (Table A-3)

DCE

Cleanup Standard	2 µg/L
Wells Exceeding Standard	2 (PW-01A, PW-84A)
Previous Year	None
Wells Below Standard	4 (PW-03A, PW-83A, PW-89A, PW-92A)
Concentration Range	29.0 µg/L (PW-01A) to 0.4 µg/L U (PW-92A)
Trend Plots	Figure 6B
Analytical Data	Attachment A (Tables A-2)

VC

Cleanup Standard	2 µg/L
Wells Exceeding Standard	1 (PW-01A)
Previous Year	None
Wells Below Standard	5 (PW-03A, PW-83A, PW-84A, PW-89A, PW-92A)
Concentration Range	9.16 µg/L (PW-01A) to 0.4 µg/L U (PW-89A, PW-92A)
Trend Plots	Figure 6C
Analytical Data	Attachment A (Tables A-5)

CVOCs Concentration Overview

In 2018, PW-84A, PW-01A, and PW-89A were the only wells to exceed a cleanup standard for CVOCs. Historically, CVOC concentrations have fluctuated around their respective cleanup standards, and exhibited the same tendency with the 2018 data.

Inorganic Compounds

Fluoride

Cleanup Standard	4 mg/L
Wells Exceeding Standard	1 (PW-89A)
Previous Year	None
Wells Below Standard	Not applicable; PW-89A only monitoring well listed in QAPP
Concentration Range	18.2 mg/L (fall) to 2.9 J-flag mg/L (FW-5)
Trend Plots	Figure 6D
Analytical Data	Attachment A (Table A-9)

Nitrate

Cleanup Standard	10 mg/L
Wells Exceeding Standard	1 (PW-89A)
Previous Year	None
Wells Below Standard	Not applicable; PW-89A only well listed in QAPP
Concentration Range	21.1 J mg/L (spring) to 4.49 mg/L (fall)
Trend Plots	Figure 6E
Analytical Data	Attachment A (Table A-7)

Ammonium

Cleanup Standard	250 mg/L
Wells Exceeding Standard	2 (PW-01A plus extraction well FW-5)
Previous Year	2 (PW-01A plus extraction well FW-5)
Wells Below Standard	5 (PW-03A, PW-83A, PW-84A, PW-89A, PW-92A)
Concentration Range	2,400 mg/L (PW-01A) to 0.02 mg/L U (PW-84A)
Trend Plots	Figure 6F
Analytical Data	Attachment A (Table A-8)

Inorganic Compounds Concentration Overview

Fluoride concentrations remained relatively stable at PW-89A in 2018 (Figure 6D).

The nitrate concentrations in PW-89A were below the cleanup standard, and continued in a general downward trend that started in 2016 (Figure 6E).

Concentrations of ammonium have fluctuated above and below the cleanup standard in PW-01A and extraction well FW-5 in the past 5-year period (2014 to 2018) (Figure 6F). There was a spike at PW-01A in the spring 2014 sampling event (735 mg/L) and in the spring 2017 sampling event (2,400 mg/L) that appeared to be controlled by extraction well FW-5. Ammonium concentrations have been on a downward trend at PW-01A, and fell below the cleanup standard (250 mg/L) by the fall of 2018.

Former Crucible Cleaning Area

Performance monitoring in the FCCA following the 2010 EISB injections continued through 2018. Groundwater samples were collected from 16 monitoring wells. Figures 7A through 7E present groundwater quality trends for any FCCA well that exceeded cleanup standards for

CVOCs in the past 5-year period (2014 to 2018). From 2014 through 2018, no wells in the area have exceeded the cleanup standard for DCA (Table 6). Figures 7F through 7G present additional information on the spatial distribution of CVOCs in the FCCA. Complete analytical details for FCCA wells are presented in Attachment C.

Sub-Area	FCCA
Number of Monitoring Wells	16
COCs	CVOCs

CVOCs

TCA

Cleanup Standard	200 µg/L
Wells Exceeding Standard	5 (PW-69A, PW-94A, PW-95A, PW-100A, plus extraction well FW-1)
Previous Year	3 (PW-94A, PW-95A, PW-100A)
Wells Below Standard	12 (MW-01A, MW-02A, MW-03A, MW-04A, PW-31A, PW-45A, PW-68A, PW-70AR, PW-71A, PW-72A, PW-93A, PW-101A)
Concentration Range	1,630 µg/L (PW-94A) to 0.4 µg/L U (MW-01A, MW-02A, MW-04A, PW-31A, PW-45A, PW-70AR, PW-71A, PW-72A)
Trend Plots	Figure 7A
Analytical Data	Attachment A (Table A-1) and Attachment C

PCE

Cleanup Standard	5 µg/L
Wells Exceeding Standard	2 (PW-69A, PW-100A)
Previous Year	2 (PW-69A, PW-100A)
Wells Below Standard	14 (MW-01A, MW-02A, MW-03A, MW-04A, PW-31A, PW-45A, PW-68A, PW-70AR, PW-71A, PW-72A, PW-93A, PW-94A, PW-95A, PW-101A)
Concentration Range	10.8 µg/L (PW-69A) to 0.4 µg/L U (MW-01A, MW-02A, MW-03A, MW-04A, PW-31A, PW-45A, PW-68A, PW-70AR, PW-71A, PW-72A, PW-101A)
Trend Plots	Figure 7B
Analytical Data	Attachment A (Table A-4) and Attachment C

TCE

Cleanup Standard	5 µg/L
Wells Exceeding Standard	1 (PW-100A)
Previous Year	1 (PW-100A)
Wells Below Standard	15 (MW-01A, MW-02A, MW-03A, MW-04A, PW-31A, PW-45A, PW-68A, PW-69A, PW-70AR, PW-71A, PW-72A, PW-93A, PW-94A, PW-95A, PW-101A)
Concentration Range	8.54 µg/L (PW-100A) to 0.4 µg/L U (MW-01A, MW-03A, MW-04A, PW-31A, PW-45A, PW-68A, PW-70AR, PW-71A, PW-72A)
Trend Plots	Figure 7C
Analytical Data	Attachment A (Table A-3) and Attachment C

DCE

Cleanup Standard	7 µg/L
Wells Exceeding Standard	9 (MW-01A, MW-02A, MW-04A, PW-69A, PW-93A, PW-94A, PW-95A, PW-100A, plus extraction well FW-1)
Previous Year	9 (MW-01A, MW-02A, MW-04A, PW-69A, PW-93A, PW-94A, PW-95A, PW-100A, plus extraction well FW-1)
Wells Below Standard	8 (MW-03A, PW-31A, PW-45A, PW-68A, PW-70AR, PW-71A, PW-72A, PW-101A)
Concentration Range	168 µg/L (PW-100A) to 0.4 µg/L U (PW-31A, PW-70AR, PW-71A, PW-72A)
Trend Plots	Figure 7D
Analytical Data	Attachment A (Table A-2) and Attachment C

VC

Cleanup Standard	2 µg/L
Wells Exceeding Standard	10 (MW-01A, MW-02A, MW-04A, PW-45A, PW-69A, PW-93A, PW-94A, PW-95A, PW-100A, plus extraction well FW-1)
Previous Year	9 (MW-01A, MW-02A, MW-04A, PW-45A, PW-69A, PW-93A, PW-94A, PW-100A, plus extraction well FW-1)
Wells Below Standard	7 (MW-03A, PW-31A, PW-68A, PW-70AR, PW-71A, PW-72A, PW-101A)
Concentration Range	37.0 µg/L (MW-100A) to 0.4 µg/L U (PW-31A, PW-68A, PW-70AR, PW-71A, PW-72A, PW-101A)
Trend Plots	Figure 7E
Analytical Data	Attachment A (Table A-5) and Attachment C

CVOCs Concentration Overview

TCA and Dechlorinated Daughter Compounds. The EISB project in the FCCA was performed in 2010 to address TCA concentrations in source area well PW-93A, which have been below cleanup standards since 2012 (Attachment C).

TCA concentrations in PW-94A rose in 2014 and were stable and above the cleanup standard through 2018.

In PW-100A, TCA concentrations increased from non-detect in 2016 to 1,430 µg/L in the spring of 2017 (Table A-1). By the fall of 2018, the TCA concentration in PW-100A had decreased to below the cleanup standard of 200 µg/L. Following the same pattern, the concentration of daughter compound DCA in PW-100A was elevated between the spring of 2017 and the spring of 2018, and decreased in the fall of 2018 (Table A-6). Although PW-100A is not located downgradient of source area well PW-93A, it is in close proximity to it.

Groundwater field parameters in the FCCA (dissolved oxygen, pH, oxidation reduction potential) remain in the EPA-recommended ranges to support reductive dechlorination (Table 5). The average groundwater parameters for all FCCA wells were 0.54 mg/L (dissolved oxygen), 32.33 millivolts (oxidation-reduction potential), and 6.62 (pH). Conditions for reductive dechlorination appear to be nearly ideal in PW-94A, but TCA concentrations nonetheless have been relatively stable since 2014.

PCE and Dechlorinated Daughter Compounds. The PCE concentrations in the FCCA generally have been declining since the EISB project in 2010 (Attachment C). Beginning in the fall of 2016 and through the spring of 2018, there were increases in PCE concentrations above the cleanup standard (5 µg/L) in PW-94A (fall of 2016), PW-69A (spring of 2017), and PW-100A (spring of 2017) (Figure 7B). PCE concentrations in all three wells were below the cleanup standard by the fall of 2018.

With the exception of PW-100A, TCE concentrations generally have declined since 2009. Similar to the increase of PCE, the concentration of TCE increased above the cleanup standard (5 µg/L) in PW-100A during 2017 and was below the cleanup standard by the fall of 2018 (Figure 7C).

Concentrations of DCE exceeded the cleanup standard (7 µg/L) in eight monitoring wells in 2018, and concentrations of VC exceeded the cleanup standard (2 µg/L) in nine monitoring wells. Monitoring wells that exceeded the cleanup standard for daughter products DCE and VC from 2014 to 2018 are shown in Figures 7D and 7E, respectively. The wells that exceeded the cleanup standard for DCE are similar to those that exceeded the cleanup standard for VC. In general, decreasing TCE concentrations in the FCCA have resulted in cleanup exceedances in daughter products DCE and VC, which was expected (see Attachment C). Figure 7F shows the 2018 concentrations of ethane compounds spatially in the FCCA. Figure 7G shows the 2018 concentrations of ethane compounds spatially in the FCCA.

ATI recognizes the persistence of TCA and PCE daughter products in the FCCA above cleanup standards; particularly in monitoring well PW-94A. ATI plans to perform additional EISB remediation in the FCCA that will complete the additional remaining optional string (String 3) from the EPA-approved work plan for the FCCA (GSI, 2010). An operations plan will be submitted to EPA in the second quarter of 2019 with the remediation to be performed in the summer of 2019.

Dump Master Area

In 2018, groundwater samples were collected from six monitoring wells in the Dump Master Area. From 2014 through 2018, no wells in the area exceeded the cleanup standards for DCA, PCE, or TCE (Table 6). Figures 8A through 8C present groundwater quality trends for any monitoring wells with CVOC concentrations exceeding the cleanup standards during the past 5-year period (2014 to 2018). Complete analytical details for the Dump Master Area wells are presented in Attachment A.

Sub-Area	<u>Dump Master Area</u>
Number of Monitoring Wells	6
COCs	CVOCs
CVOCs	
TCA	
Cleanup Standard	200 µg/L
Wells Exceeding Standard	2 (PW-30A plus extraction well FW-4)
Previous Year	2 (PW-30A plus extraction well FW-4)
Wells Below Standard	5 (PW-46A, PW-73B, PW-74B, PW-75A, PW-91A)
Concentration Range	741 µg/L (PW-30A) to 0.4 µg/L U (PW-46A, PW-73B, PW-74B)

Trend Plots	Figure 8A
Analytical Data	Attachment A (Table A-1)
DCE	
Cleanup Standard	7 µg/L
Wells Exceeding Standard	2 (PW-30A plus extraction well FW-4)
Previous Year	2 (PW-30A plus extraction well FW-4)
Wells Below Standard	5 (PW-46A, PW-73B, PW-74B, PW-75A, PW-91A)
Concentration Range	34.0 µg/L (PW-30A) to 0.4 µg/L U (PW-46A)
Trend Plots	Figure 8B
Analytical Data	Attachment A (Table A-2)
VC	
Cleanup Standard	2 µg/L
Wells Exceeding Standard	1 (PW-73B)
Previous Year	1 (PW-73B)
Wells Below Standard	5 (PW-30A, PW-46A, PW-74B, PW-75A, PW-91A)
Concentration Range	2.46 µg/L (PW-73B) to 0.4 µg/L U (PW-46A, PW-75A)
Trend Plots	Figure 8C
Analytical Data	Attachment A (Table A-5)

CVOCs Concentration Overview

The only Dump Master Area monitoring well to exceed the TCA and DCE cleanup standards in 2018 was PW-30A; 741 µg/L for TCA and 34.0 µg/L for DCE. TCA and DCE concentrations in PW-30A fluctuated up and down in a similar fashion in 2016 and 2017, ending with an upward trend in 2018 (Figures 8A and 8B). Additionally, PW-73B exceeded the VC cleanup standard (2 µg/L) in the spring of 2018 (2.46 µg/L), but was below the cleanup standard in the fall of 2018 (Figure 8C). In the past 5-year monitoring period (2014 to 2018), there have been no exceedances at any well for TCE, PCE, or DCA (Table 6).

ATI will complete the conversion of well PW-30A to an extraction well in 2019 to assist in capturing CVOC compounds in the FW-4 area.

Material Recycle Area

Groundwater samples were collected from five monitoring wells in the Material Recycle Area. Figures 9A through 9C present groundwater quality trends for any monitoring well that exceeded a cleanup standard during the past 5-year period (2014 through 2018). No wells in the area have exceeded the cleanup standards for TCA, DCA, or PCE (Table 6) since 2013. Complete analytical details for the Material Recycle Area wells are presented in Attachment A.

<u>Sub-Area</u>	<u>Material Recycle Area</u>
Number of Monitoring Wells	5
COCs	CVOCs
CVOCs	
TCE	
Cleanup Standard	5 µg/L
Wells Exceeding Standard	4 (PW-42A, PW-85A, PW-86A, plus extraction well FW-2)
Previous Year	3 (PW-42A, PW-85A, PW-86A)
Wells Below Standard	2 (PW-87A, PW-88A)
Concentration Range	80.9 µg/L (PW-42A) to 0.4 µg/L U (PW-87A)
Trend Plots	Figure 9A
Analytical Data	Attachment A (Table A-3)
DCE	
Cleanup Standard	7 µg/L
Wells Exceeding Standard	2 (PW-42A, PW-85A)
Previous Year	None
Wells Below Standard	3 (PW-86A, PW-87A, PW-88A)
Concentration Range	10.3 µg/L (PW-85A) to 0.4 µg/L U (PW-87A, PW-88A)
Trend Plots	Figure 9B
Analytical Data	Attachment A (Table A-2)
VC	
Cleanup Standard	2 µg/L
Wells Exceeding Standard	2 (PW-42A, PW-86A)
Previous Year	2 (PW-42A, PW-86A)
Wells Below Standard	3 (PW-85A, PW-87A, PW-88A)
Concentration Range	6.88 µg/L (PW-86A) to 0.4 µg/L U (PW-87A, PW-88A)
Trend Plots	Figure 9C
Analytical Data	Attachment A (Table A-5)

CVOCs Concentration Overview

Concentrations of TCE in PW-42A and PW-86A have fluctuated both above and below the cleanup standard (5 µg/L) throughout the past 5 years (2014 through 2018) (Figure 9A). In PW-42A, the TCE concentration increased above the cleanup standard in 2017 to 57.3 µg/L and has remained relatively stable since then.

The DCE concentration at wells PW-42A (8.41 µg/L) and PW-85A (10.3 µg/L) exceeded the cleanup standard of 7 µg/L in 2018 (Figure 9B). Wells PW-42A and PW-86A also exceeded the VC cleanup standard (2 µg/L) in 2018. The increasing VC trend in PW-42A and PW-86A (which began in 2016) appears to have stabilized. No Material Recycle Area wells exceeded the cleanup standards for DCA, PCE, or TCA in the past 5 years (2014 to 2018).

Resampling for Sitewide Exceedances

In 2016, a sitewide sampling event was conducted with additional constituents analyzed that are not routine for the biannual groundwater monitoring event (GSI, 2018). Some wells had cleanup standard exceedances for constituents not included in the biannual groundwater monitoring. These constituents were resampled in 2018 for verification and evaluation purposes. However, dissolved metals were not resampled because total metals will be used for evaluation. Table 7 presents the 2016 sitewide results and the 2018 resample results. Total arsenic at PW-71A was not collected in 2018 and will be resampled in 2019. Although some 2018 resampled results were below the cleanup standard, several results for remained above the cleanup standard from the 2016 sitewide sampling event. ATI will use these data to determine what modifications are needed to the monitoring program and the revisions will be proposed to EPA in the Sitewide Exceedance Analysis report, to be submitted in May 2019.

Surface Water Quality

In 2018, surface water quality samples were collected from Murder and Truax Creeks at locations upstream and downstream from the Fabrication Area boundaries. In 2016, an additional sample location was added in Murder Creek, at EPA's request, approximately halfway between the west and east boundaries of the Fabrication Area. Sample locations are shown in Figure 1 and results are presented in Tables 7 and 8 for Murder and Truax Creeks, respectively.

In Murder Creek, there were detected concentrations of TCA (2.43 µg/L) and DCA (0.492 µg/L) at downstream locations in both the 2018 spring and fall monitoring events. There were detected concentrations of TCA (6.45 µg/L), DCA (0.892 µg/L), and DCE (0.554 µg/L) at the mid-facility location in the fall monitoring event. All detections were significantly below the applicable surface water cleanup standards outlined in the QAPP for TCA (18,000 µg/L) and DCE (11,600 µg/L) (Table 8). There is no surface water cleanup standard for DCA.

In 2018, there were multiple CVOC concentrations detected below 1 µg/L at the downstream location in Truax Creek (Table 9). Additionally, ammonia was detected in the spring (0.253 mg/L) and fall (0.155 mg/L) at the downstream location. All detections were significantly below the applicable surface water cleanup standards (Table 9). No detections in Truax Creek exceeded ambient water quality criteria for aquatic health (i.e., surface water cleanup standards).

4. System Modifications

Table 10 shows the estimated CVOC recovery rates for each focused extraction well operating at the facility in 2018. System improvements and modifications have allowed for higher recovery rates at extraction wells FW-1 and FW-2. Based on aquifer testing conducted at extraction well FW-4 and monitoring well PW-30A in 2013, ATI submitted a work plan to EPA to convert PW-30A to an extraction well that will operate in conjunction with FW-4 (GSI, 2016b). The objective for this system change is to improve onsite containment in this area of the facility. Conversion of PW-30A to an extraction well is scheduled for 2019.

5. Conclusions

During groundwater monitoring and GETS operation in 2018, ATI monitored groundwater elevations, analyzed groundwater constituent concentrations, and monitored extraction well operations. ATI will continue the monitoring and sampling program in 2019. The following bullets summarize the work that ATI plans to conduct in the Fabrication Area in 2019, which was developed on the basis of groundwater monitoring and operational data from 2018 and previous years:

- **PW-30A Conversion.** Based on aquifer testing conducted at extraction well FW-4 and monitoring well PW-30A in 2013, ATI submitted a work plan to install a GETS in PW-30A (GSI, 2016a). ATI is planning to convert PW-30A to an extraction well that will operate in conjunction with FW-4. The objective for this system change is to improve onsite containment in this area of the facility. Conversion of PW-30A to an extraction well is scheduled for 2019.
- **Acid Sump Investigation.** Concentration trends and CVOC distribution in the Acid Sump Area continued to be elevated in 2018, 26 months after the source area excavation in August 2016, suggesting a persistent source of CVOCs may be present in this area. ATI plans to conduct an additional investigation to understand the nature and extent of this source.
- **FCCA EISB Remediation.** The continued presence of daughter CVOC ethane and ethene concentrations in the FCCA, along with favorable anaerobic conditions, suggest that EISB processes are continuing to reduce CVOCs in the area. However, as a result of rising concentrations of TCA in hot-spot monitoring wells, ATI intends to complete additional EISB remediation in 2019 under the EPA-approved work plan for the area (GSI, 2010). An operations plan will be submitted to EPA in May 2019.
- **Groundwater Monitoring.** Routine groundwater monitoring will continue to assess the effectiveness of the enhanced reductive dechlorination process in reducing CVOC concentrations in groundwater. Groundwater parameters in the Acid Sump Area and FCCA will continue to be collected and assessed for their ability to support reductive dechlorination. Routine groundwater monitoring also will assess contaminant trends in the Ammonium Sulfate Storage Area and Dump Master Area, where contaminant concentrations are either below cleanup standards or are slightly above cleanup standards and appear to be stable.

6. References

CH2M HILL. 2006. Fabrication Area Groundwater 3-Year Evaluation Addendum.

EPA. 1992. Estimating Potential for Occurrence of DNAPL at Superfund Sites. OSWER Publication 9355.4-07FS. National Technical Information Service (NTIS) Order Number PB92-963338CDH.

EPA. 1994. Record of Decision Declaration, Decision Summary, and Responsiveness Summary for Final Remedial Action of Groundwater and Sediments Operable Unit, Teledyne Wah Chang Albany Superfund Site Millersburg, Albany. U.S. Environmental Protection Agency. June 1994.

EPA. 2002. Guidance on Environmental Data Verification and Validation. EPA QA/G-8. EPA/240/R-02/004. November 2002.

EPA. 2008. USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review. EPA-540/R-08/01. June 2008.

EPA. 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. EPA 540-R-08-005. U.S. Environmental Protection Agency (EPA). January 2009.

EPA. 2010. USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review. EPA-540/R-10/011. January 2010.

GSI. 2010. Former Crucible Cleaning Area Enhanced In Situ Bioremediation Work Plan, ATI Wah Chang Facility, Albany, Oregon. Prepared by GSI Water Solutions, Inc., June 2010.

GSI. 2013. Former Crucible Cleaning Area Enhanced In Situ Bioremediation Project and Performance Summary, Fabrication Area, ATI Wah Chang Facility, Albany, Oregon. Prepared by GSI Water Solutions, Inc.

GSI. 2015. Quality Assurance Project Plan for Site-Wide Remedial Actions. Prepared by GSI Water Solutions, Inc., December 2015.

GSI. 2016a. Acid Sump Area Source Area Remedial Action Plan – Final. Prepared by GSI Water Solutions, Inc., July 2016.

GSI. 2016b. PW-30A Conversion to Groundwater Extraction Well, ATI Wah Chang Facility, Albany, Oregon. Prepared by GSI Water Solutions, Inc., September 30, 2016.

GSI. 2017. Acid Sump Area, Source Area Soil Excavation Construction Report. Prepared by GSI Water Solutions, Inc., May 5, 2017.

GSI. 2018. Sitewide Groundwater and Surface Water Sampling Results – 2016, Revised. Prepared by GSI Water Solutions, Inc. (GSI). March 2018.

Horvath, A. L. and F. W. Getzen. 1999. Journal of Physical Chemical Reference Data, Vol. 28, No. 2, pp. 395 – 627.

Table 1. Fabrication Area Monthly Average of Groundwater Extraction Volumes

ATI Millersburg Operations, Oregon

Extraction Well	Monthly Average Volume of Groundwater Extracted (gallons)																
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
FW-1	151,700	162,900	166,000	171,000	207,900	393,800	422,484	357,322	301,511	289,316	202,304	232,099	306,696	198,260	285,497	149,133	446,185
FW-2	281,800	234,800	160,000	219,800	231,500	685,800	682,640	749,026	675,762	909,635	619,699	378,371	597,127	421,505	408,869	167,358	221,087
FW-3	65,500	90,900	88,900	85,100	93,400	100,500	100,532	96,235	--	60,804	100,868	117,719	99,340	102,326	159,783	154,528	97,511
FW-4	125,900	144,000	113,500	168,700	172,200	183,900	183,930	148,071	110,757	226,808	192,976	184,057	154,537	174,856	179,885	145,678	69,915
FW-5	94,900	63,200	47,100	35,100	39,800	52,900	156,772	217,659	256,701	718,223	95,637	130,918	160,928	82,015	93,387	258,035	454,878
FW-7	91,900	109,130	85,900	107,700	153,000	147,900	177,355	177,622	--	--	--	--	--	--	--	--	--
Extraction System																	
Monthly Average	811,700	804,930	661,400	787,400	897,800	1,564,800	1,723,712	1,745,935	1,344,732	2,204,786	1,211,483	1,043,164	1,318,628	978,963	1,127,421	874,732	1,289,576
Annual Rainfall (inches)	43.50	46.90	35.40	39.30	53.40	37.60	31.62	34.09	50.52	32.48	59.17	25.15	46.24	40.98	51.43	50.40	33.67

Notes:

FW-3 shutdown in 2010 for the Acid Sump Remediation Project.

FW-7 shutdown on July 30, 2009, per U.S. Environmental Protection Agency approval.

Table 2. Summary of Quarterly CVOC Concentrations in Fabrication Area Extraction Wells in 2018

ATI Millersburg Operations, Oregon

Parameter	Units	Spring						Fall					
		FW-1 ¹	FW-2	FW-3	FW-4	FW-5	FW-7 ²	FW-1	FW-2	FW-3	FW-4	FW-5	FW-7 ²
CVOCs													
1,1,1-trichloroethane (TCA)	µg/L	NS	0.400 U	4.92	387	--	0.400 U	445	0.936	4.51	537	--	0.400 U
1,1,2-trichlorethane	µg/L	NS	0.500 U	0.500 U	1.00 U	--	0.500 U	5.00 U	0.500 U	0.500 U	0.500 U	--	0.500 U
1,1-dichloroethane (DCA)	µg/L	NS	0.400 U	5.13	7.59	--	1.92	119	0.614	5.45	12.7	--	3.92
1,1-dichloroethene (DCE)	µg/L	NS	0.400 U	1.52	18.4	--	19.3	41.9	0.234 J	1.66	29.2	--	25.4
1,2-dichloroethane	µg/L	NS	0.400 U	0.400 U	0.800 U	--	0.400 U	4.00 U	0.400 U	0.400 U	0.400 U	--	0.400 U
Chloroethane	µg/L	NS	5.00 U	10.0 U	10.0 U	--	5.00 U	191	5.00 U	5.00 U	5.00 U	--	5.00 U
Chloroform	µg/L	NS	1.66	1.00 U	2.00 U	--	1.00 U	10.0 U	1.00 U	1.00 U	1.00 U	--	1.00 U
cis-1,2-dichloroethene	µg/L	NS	1.77	0.400 U	1.02	--	0.939	2.62 J	1.60	0.220 J	1.14	--	1.27
Tetrachloroethene (PCE)	µg/L	NS	0.742	0.400 U	0.800 U	--	0.400 U	4.00 U	0.284 J	0.400 U	0.642	--	0.400 U
Trichloroethene (TCE)	µg/L	NS	9.17	0.230 J	0.880	--	0.400 U	4.00 U	6.40	0.241 J	1.32	--	0.400 U
Vinyl Chloride (VC)	µg/L	NS	0.400 U	0.400 U	0.800 U	--	8.03	6.03	0.400 U	0.400 U	0.387 J	--	10.6
Total CVOC Concentration³	µg/L		14.1	11.8 J	415		30.19	806 J	10.1 J	12.1 J	582 J		41.2
Inorganics													
Ammonia (NH ₃)	mg/L	--	--	--	--	247	--	--	--	--	--	172	--
Ammonium (NH ₄)	mg/L	--	--	--	--	308.8	--	--	--	--	--	215	--
Fluoride	mg/L	--	--	5.70	--	--	--	--	2.90 J	--	--	--	--
Iron	mg/L	--	--	--	--	2.75	--	--	--	--	--	0.821	--
Manganese	mg/L	--	--	--	--	1.74	--	--	--	--	--	1.57	--
Nitrate	mg/L	--	--	0.724	--	--	--	--	0.530	--	--	--	--

Table 2. Summary of Quarterly CVOC Concentrations in Fabrication Area Extraction Wells in 2018

ATI Millersburg Operations, Oregon

Notes:

¹ Extraction well FW-1 not sampled in the spring of 2019 because of operational issues that have since been remedied.

² Extraction well FW-7 shutdown July 30, 2009, per U.S. Environmental Protection Agency; samples collected using low-flow sampling procedures.

³ Totals include detected CVOCs.

µg/L = microgram per liter

CVOC = chlorinated volatile organic compound

J = estimated concentration

mg/L = milligram per liter

-- = not part of the sampling program

NS = not sampled

U = not detected at the reporting limit

Table 3. Groundwater Sampling and Analysis Summary for Fabrication Area Wells in 2018
ATI Millersburg Operations, Oregon

Wells	Field Parameters	CVOCs	Fluoride	Ammonia	Nitrate
Acid Sump Area (Extraction Well FW-3)					
PW-14, PW-15AR, PW-32A, PW-33A, PW-34A, PW-81A	Water Levels Only	NA	NA	NA	NA
PW-10, PW-11, PW-12, PW-13, PW-16A, PW-19A, PW-76A, PW-77A, PW-78A, PW-79A, PW-80A, PW-82A, PW-98A, PW-99A, EI-5, E-11, FW-6, I-2, I-3	X	X	X (excludes PW-19A, PW-98A)	NA	X
Ammonium Sulfate Storage Area (Extraction Well FW-5)					
PZ-01, PW-20A	Water Levels Only	NA	NA	NA	NA
PW-01A, PW-03A, PW-83A, PW-89A, PW-92A	X	X	PW-89A Only	X	PW-89A Only
Former Crucible Cleaning Area (Extraction Well FW-1)					
MW-05A, MW-06A, MW-07A, MW-08A, MW-09A, MW-10A, MW-11A	Water Levels Only	NA	NA	NA	NA
PW-31A, PW-45A, PW-68A, PW-69A, PW-70AR, PW-71A, PW-72A, PW-93A, PW-94A, PW-95A, PW-100A, PW-101A, MW-01A, MW-02A, FW-7, MW-03A, MW-04A	X	X	NA	NA	NA
Dump Master Area (Extraction Well FW-4)					
PW-73A, PW-74A	Water Levels Only	NA	NA	NA	NA
PW-30A, PW-46A, PW-73B, PW-74B, PW-75A, PW-91A	X	X	NA	NA	NA
Material Recycle Area (Extraction Well FW-2)					
PW-73A, PW-74A	Water Levels Only	NA	NA	NA	NA
PW-42A, PW-84A, PW-85A, PW-86A, PW-87A, PW-88A	X	X	NA	NA	NA
Total Number of Samples Per Event	72	53	18	5	20

Notes:

CVOC = chlorinated volatile organic compound

NA = not applicable

X = collected or analyzed

PW-100A and PW-101A were installed in 2010. Initial groundwater samples were collected in August 2010.

Totals do not include extraction wells.

Table 4. Fabrication Area Wells Groundwater Elevation in 2018*ATI Millersburg Operations, Oregon*

Well	TOC Elev (ft amsl)	Spring		Fall	
		DTW (ft bgs)	GW Elev (ft amsl)	DTW (ft bgs)	GW Elev (ft amsl)
E-11	208.23	5.91	202.32	6.65	201.58
EI-5	208.70	5.73	202.97	6.84	201.86
FW-6	207.51	11.02	196.49	11.23	196.28
FW-7	201.60	9.89	191.71	10.86	190.74
I-2	207.35	4.45	202.90	4.97	202.38
I-3	208.41	4.73	203.68	5.68	202.73
MW-01A	205.20	11.40	193.80	12.36	192.84
MW-02A	204.83	7.90	196.93	8.97	195.86
MW-03A	207.59	6.30	201.29	8.01	199.58
MW-04A	204.62	7.85	196.77	9.19	195.43
MW-05A	213.98	14.88	199.10	16.30	197.68
MW-06A	211.64	12.26	199.38	14.39	197.25
MW-07A	200.49	7.75	192.74	9.46	191.03
MW-08A	201.23	7.88	193.35	9.07	192.16
MW-09A	210.00	11.70	198.30	13.74	196.26
MW-10A	212.49	14.45	198.04	16.49	196.00
MW-11A	211.02	17.83	193.19	18.65	192.37
PW-01A	211.44	14.72	196.72	15.96	195.48
PW-03A	210.50	16.09	194.41	16.51	193.99
PW-10	211.53	10.55	200.98	10.77	200.76
PW-11	208.53	6.31	202.22	7.67	200.86
PW-12	209.97	9.57	200.40	10.42	199.55
PW-13	207.78	6.02	201.76	6.48	201.30
PW-14	209.52	6.53	202.99	7.94	201.58
PW-15AR	206.50	19.90	186.60	20.20	186.30
PW-16A	209.97	16.64	193.33	17.02	192.95
PW-19A	210.43	13.91	196.52	15.41	195.02
PW-20A	210.42	17.56	192.86	17.64	192.78
PW-30A	199.75	5.42	194.33	5.95	193.80
PW-31A	214.71	8.79	205.92	11.85	202.86
PW-32A	212.56	9.11	203.45	10.66	201.90
PW-33A	212.40	6.87	205.53	9.04	203.36
PW-34A	210.73	10.67	200.06	10.85	199.88
PW-42A	209.98	8.95	201.03	9.93	200.05
PW-45A	211.69	12.65	199.04	13.97	197.72
PW-46A	209.61	14.77	194.84	15.05	194.56
PW-68A	211.63	8.20	203.43	11.32	200.31
PW-69A	209.70	5.32	204.38	9.39	200.31
PW-70AR	210.57	7.44	203.13	8.90	201.67
PW-71A	210.06	6.96	203.10	8.61	201.45
PW-72A	210.13	5.65	204.48	8.19	201.94

Table 4. Fabrication Area Wells Groundwater Elevation in 2018*ATI Millersburg Operations, Oregon*

Well	TOC Elev (ft amsl)	Spring		Fall	
		DTW (ft bgs)	GW Elev (ft amsl)	DTW (ft bgs)	GW Elev (ft amsl)
PW-73A	210.86	3.95	206.91	4.61	206.25
PW-73B	211.23	13.11	198.12	13.76	197.47
PW-74A	209.81	8.95	200.86	9.09	200.72
PW-74B	209.64	17.20	192.44	17.35	192.29
PW-75A	197.57	6.72	190.85	7.70	189.87
PW-76A	207.94	16.40	191.54	16.87	191.07
PW-77A	209.03	18.16	190.87	19.01	190.02
PW-78A	208.96	18.43	190.53	18.79	190.17
PW-79A	198.28	6.26	192.02	6.32	191.96
PW-80A	211.03	12.73	198.30	13.17	197.86
PW-81A	208.73	6.20	202.53	7.52	201.21
PW-82A	208.64	8.18	200.46	NM	NM
PW-83A	210.28	13.78	196.50	14.48	195.80
PW-84AR	209.70	10.74	198.96	11.36	198.34
PW-85A	212.85	14.43	198.42	14.95	197.90
PW-86A	208.91	10.16	198.75	10.78	198.13
PW-87A	211.49	10.56	200.93	11.16	200.33
PW-88A	211.89	17.27	194.62	17.46	194.43
PW-89A	202.40	9.02	193.38	11.70	190.70
PW-91A	198.19	6.58	191.61	7.80	190.39
PW-92A	208.77	9.93	198.84	10.64	198.13
PW-93A	209.95	6.63	203.32	9.45	200.50
PW-94A	210.03	6.42	203.61	9.92	200.11
PW-95A	210.81	6.90	203.91	12.46	198.35
PW-98A	209.15	8.19	200.96	9.57	199.58
PW-99A	207.44	8.55	198.89	6.51	200.93
PW-100A	210.34	7.09	203.25	9.17	201.17
PW-101A	210.67	7.30	203.37	11.02	199.65
PZ-01A	210.83	7.81	203.02	9.73	201.10

Notes:

DTW = depth to water

ft amsl = feet above mean sea level

ft bgs = feet below ground surface

GW Elev = groundwater elevation

NM = not measured

TOC Elev = top of casing elevation

Table 5. Groundwater Field Parameters in Fabrication Area Wells in 2018

ATI Millersburg Operations, Oregon

		Temperature (°C)		Specific Conductance (µS/cm)		Dissolved Oxygen (mg/L)		pH (unit)		Oxidation-Reduction Potential (mV)	
Area	Well	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
<i>Cleanup Standard</i>		--		--		--		6.5 - 8.5 ¹		--	
Hot Spot Monitoring Wells											
Acid Sump	E-11 ²	17.5	21.2	415	577	3.12	2.03	6.66	6.73	139.2	88.8
Acid Sump	EI-4 ²	15.9	18.1	5,216	5,424	1.79	0.15	6.41	6.26	-11.5	-64.1
Acid Sump	EI-5 ²	16.2	18.9	1,169	1,684	0.18	0.35	6.33	6.90	7.2	-78.2
Acid Sump	EI-9 ²	16.0	19.7	2,948	3,152	1.90	0.21	6.79	6.76	-5.4	-88.1
Acid Sump	I-2	14.7	17.6	1,703	2,924	0.04	0.99	6.59	6.68	-36.9	-105.3
Acid Sump	I-3 ²	15.7	19.1	1,551	2,277	0.16	0.16	7.22	7.21	-11.3	175.8
Acid Sump	PW-11	14.6	20.2	151	157	0.07	0.24	5.86	6.05	158.2	153.7
Acid Sump	PW-13	15.1	19.2	776	498	0.21	0.26	6.11	6.31	104.0	182.1
FCCA	PW-100A	16.4	17.3	390	407	0.05	0.66	6.41	6.69	-23.3	-56.2
FCCA	PW-93A	15.3	19.2	205	270	0.13	0.76	6.08	6.32	58.6	-20.6
FCCA	PW-94A	16.0	19.1	306	245	0.06	0.76	6.73	6.74	-10.0	-70.0
FCCA	PW-95A	16.5	17.6	232	269	0.06	1.10	6.71	7.06	50.6	102.9
Non Hot Spot Monitoring Wells											
Acid Sump	FW-6 ²	15.3	16.6	334	383	6.29	5.05	6.71	6.65	97.8	129.2
Acid Sump	PW-10	13.9	20.1	112	137	1.08	0.23	4.47	5.70	133.3	72.9
Acid Sump	PW-12	NS	16.4	NS	308	NS	0.47	NS	7.36	NS	26.1
Acid Sump	PW-16A	14.3	NS	205	NS	1.20	NS	6.12	NS	95.6	NS
Acid Sump	PW-19A	13.7	17.3	117	119	2.59	0.82	5.31	5.90	114.5	225.3
Acid Sump	PW-80A	14.7	18.0	380	268	0.37	0.31	6.66	6.86	79.6	25.6
Acid Sump	PW-82A	14.7	18.6	400	355	0.21	1.63	6.57	6.76	157.1	182.2
Acid Sump	PW-98A	19.4	20.6	685	795	0.09	0.13	6.59	6.08	20.5	168.9

Table 5. Groundwater Field Parameters in Fabrication Area Wells in 2018

ATI Millersburg Operations, Oregon

		Temperature (°C)		Specific Conductance (µS/cm)		Dissolved Oxygen (mg/L)		pH (unit)		Oxidation-Reduction Potential (mV)	
Area	Well	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
<i>Cleanup Standard</i>		--		--		--		6.5 - 8.5 ¹		--	
Acid Sump	PW-99A ²	14.3	19.1	302	315	0.90	0.50	6.30	6.27	108.6	139.9
Amm Sulfate Stg	PW-01A	16.9	18.2	7,788	5,478	0.68	0.32	6.25	6.29	237.3	69.3
Amm Sulfate Stg	PW-03A	16.3	17.5	3,232	3,149	0.08	0.64	6.55	6.68	214.8	107.8
Amm Sulfate Stg	PW-83A	18.8	20.6	555	685	0.13	0.47	6.64	6.87	166.9	99.9
Amm Sulfate Stg	PW-89A	17.2	19.4	1,218	912	0.09	0.22	6.96	7.41	179.0	230.6
Amm Sulfate Stg	PW-92A	15.7	19.0	180	165	0.19	0.42	6.22	6.41	138.6	290.4
FCCA	FW-7	12.4	15.3	305	346	0.11	0.25	6.62	6.65	40.8	16.3
FCCA	PW-31A	15.2	16.9	326	323	0.74	0.28	6.26	6.39	98.3	244.8
FCCA	PW-45A	17.6	17.9	166	297	0.16	0.68	6.02	6.87	48.7	-115.2
FCCA	PW-68A	16.2	18.4	146	211	3.70	0.25	6.40	6.46	92.2	135.3
FCCA	PW-69A	15.6	19.2	328	247	0.04	1.03	6.78	7.10	-53.1	-74.5
FCCA	PW-70AR	14.9	17.3	332	247	0.39	0.86	6.56	6.53	94.7	162.8
FCCA	PW-71A	15.4	19.6	192	211	0.07	0.47	6.59	6.67	49.7	3.6
FCCA	PW-72A	15.3	19.1	127	134	1.48	0.48	6.58	6.64	67.3	161.0
FCCA	PW-101A	14.7	0.8	168	125	0.06	0.42	6.57	6.81	44.3	16.5
FCCA	MW-01A	12.9	15.8	290	325	0.13	0.94	6.20	6.28	77.4	108.3
FCCA	MW-02A	13.5	16.2	366	360	0.08	0.82	7.03	6.98	-96.8	-103.4
FCCA	MW-03A	12.9	14.7	441	466	0.08	0.50	7.09	7.13	-94.2	107.1
FCCA	MW-04A	12.3	15.8	319	325	0.05	0.81	6.53	6.68	22.4	13.0
Material Recycle	PW-42A	17.0	18.6	310	275	0.10	0.63	6.69	6.70	-24.6	-46.7
Material Recycle	PW-84A	15.4	18.1	265	273	0.64	0.55	6.07	6.65	80.7	50.4
Material Recycle	PW-85A	15.6	17.4	406	298	0.32	0.30	6.02	6.55	84.5	36.4

Table 5. Groundwater Field Parameters in Fabrication Area Wells in 2018

ATI Millersburg Operations, Oregon

		Temperature (°C)		Specific Conductance (µS/cm)		Dissolved Oxygen (mg/L)		pH (unit)		Oxidation-Reduction Potential (mV)	
Area	Well	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
<i>Cleanup Standard</i>		--		--		--		6.5 - 8.5 ¹		--	
Material Recycle	PW-86A	16.4	17.7	220	207	0.23	0.46	6.19	6.71	70.1	19.6
Material Recycle	PW-87A	13.5	15.4	197	198	0.23	0.31	6.26	6.81	55.9	-62.7
Material Recycle	PW-88A	15.5	17.0	150	163	0.26	0.40	6.28	6.83	77.1	-38.7
Dump Master	PW-30A	15.6	20.3	153	155	0.26	0.40	5.56	6.25	76.2	174.6
Dump Master	PW-46A	15.4	17.0	138	115	0.49	0.51	5.80	6.49	72.2	193.8
Dump Master	PW-73B	14.4	15.6	211	201	0.51	0.21	6.28	7.23	73.4	143.4
Dump Master	PW-74B	14.6	15.6	164	157	0.32	0.71	6.06	6.85	70.6	182.3
Dump Master	PW-75A	13.8	18.1	194	232	0.34	0.18	5.59	6.26	80.0	118.6
Dump Master	PW-91A	15.1	18.2	303	309	0.39	0.49	6.08	6.48	55.9	8.8
Perimeter Monitoring Wells											
Acid Sump	PW-76A	17.1	20.3	83	100	1.71	1.55	6.41	6.35	122.9	194.3
Acid Sump	PW-77A	17.4	18.6	1,079	1,126	2.35	0.30	6.34	6.15	114.5	219.3
Acid Sump	PW-78A	14.9	16.7	391	441	0.37	0.28	5.88	6.29	89.6	205.2
Acid Sump	PW-79A	16.4	19.3	233	206	0.38	1.15	6.18	6.36	87.2	214.2

Notes:¹ The cleanup standard is the U.S. Environmental Protection Agency drinking water secondary maximum contaminant level (SMCL).² Monitoring well purged dry before parameter stabilization.

°C = degree Celsius

mg/L = milligram per liter

µS/cm = micro Siemen per centimeter

mV = millivolt

Amm-Sulfate Stg = Ammonium Sulfate Storage Area

NS = not sampled

FCCA = Former Crucible Cleaning Area

Table 6. Fabrication Area Monitoring Wells Exceeding Cleanup Standards by Area in 2018

ATI Millersburg Operations, Oregon

Area	Extraction Well	TCA	DCA	PCE	TCE	DCE	VC	Fluoride	Nitrate	Ammonium
Cleanup Standard		200 µg/L	3,700 µg/L	5 µg/L	5 µg/L	7 µg/L	2 µg/L	4 mg/L	10 mg/L	250 mg/L
Acid Sump Area	FW-3	EI-5, I-2, I-3, PW-12, PW-98A	I-2	I-2, PW-98A	I-2, I-3, PW-12, PW-13, PW-98A	E-11, EI-5, I-2, I-3, PW-11, PW-12, PW-13, PW-77A, PW-78A, PW-79A, PW-80A, PW-98A, PW-99A	EI-5, I-2, I-3, PW-12, PW-77A, PW-80A, PW-98A, PW-99A	E-11, EI-5, FW-6, I-2, PW-10, PW-13, PW-98A, PW-99A	I-2, I-3, PW-13, PW-98A	NA
Ammonium Sulfate Storage Area	FW-5	No wells	No wells	No wells	FPW-84A, PW-89A	PW-01A, PW-84A	PW-01A	PW-89A	PW-89A	PW-01A
Dump Master Area	FW-4	PW-30A	No wells	No wells	No wells	PW-30A	PW-73B	NA	NA	NA
Former Crucible Cleaning Area	FW-1	PW-69A, PW-94A, PW-95A, PW-100A	No wells	PW-69A, PW-100A	PW-100A	MW-01A, MW-02A, MW-04A, PW-69A, PW-93A, PW-94A, PW-95A, PW-100A	MW-01A, MW-02A, MW-04A, PW-45A, PW-69A, PW-93A, PW-94A, PW-95A, PW-100A	NA	NA	NA
Material Recycle Area	FW-2	No wells	No wells	No wells	PW-42A, PW-85A, PW-86A	PW-42A, PW-85A	PW-42A, PW-86A	NA	NA	NA

Notes:

µg/L = microgram per liter

DCA = 1,1-dichloroethane

DCE = 1,1-dichloroethene

mg/L = milligram per liter

NA = not applicable, wells not analyzed for constituent in the area

PCE = tetrachloroethene

TCA = 1,1,1-trichloroethane

TCE = trichloroethene

VC = vinyl chloride

Table 7. Fabrication Area Sitewide Exceedance Resampling
ATI Millersburg Operations, Oregon

Well	Analyte	Cleanup Level	Units	2016 Sitewide Result	Resample Date	2018 Resample Result
FW-3	Pentachlorophenol	1	µg/L	2.51 J	10/4/2018	1.80
FW-5	Cadmium, Dissolved	5	µg/L	5.06	10/2/2018	--
	Cadmium, Total	5	mg/L	6.58		0.383
	Fluoride	4	mg/L	16.6		23.2
	Nitrate	10	µg/L	62.2		14.7
	Trichloroethene	5	µg/L	5.78		41.8
MW-02A	Arsenic, Dissolved	10	µg/L	20.1	--	--
	Arsenic, Total	10	µg/L	19.9	10/16/2018	21.5
MW-03A	Arsenic, Dissolved	10	µg/L	11.1	--	--
	Arsenic, Total	10	µg/L	11.4	10/16/2018	10.3
MW-07A	Arsenic, Dissolved	10	µg/L	18.6	--	--
	Arsenic, Total	10	µg/L	19.2	10/16/2018	39.4
MW-08A	Arsenic, Dissolved	10	µg/L	32	--	--
	Arsenic, Total	10	µg/L	24.5	10/16/2018	31.7
PW-03A	Nitrate	10	mg/L	19.9	10/3/2018	17.5
	Pentachlorophenol	1	µg/L	5.55		1.80
PW-15AR	Radium 226/228	5	pCi/L	16.6	5/16/2017	2.7
PW-31A	Nitrate	10	mg/L	13.2	10/4/2018	10.7
	Pentachlorophenol	1	µg/L	2.61		2.27
PW-69A	Arsenic, Dissolved	10	µg/L	19.9	--	--
	Arsenic, Total	10	µg/L	19.8	10/4/2018	20.1
	Fluoride	4	mg/L	8.89		10.2
PW-71A	Arsenic, Dissolved	10	µg/L	16.7	--	--
	Arsenic, Total	10	µg/L	16.7	--	--
PW-74A	Arsenic, Total	10	µg/L	80.1	10/10/2018	18.0
PW-81A	1,1-dichloroethene	7	µg/L	7.53	10/10/2018	25.2
PW-82A	Pentachlorophenol	1	µg/L	2.59	10/11/2018	1.00
PW-83A	Pentachlorophenol	1	µg/L	2.51	10/3/2018	2.09
PW-89A	Radium 226/228	5	pCi/L	11.29	10/12/2018	0.59
PW-93A	Arsenic, Dissolved	10	µg/L	23.3	--	--
	Arsenic, Total	10	µg/L	23.2	10/11/2018	23.5

Table 7. Fabrication Area Sitewide Exceedance Resampling
ATI Millersburg Operations, Oregon

Well	Analyte	Cleanup Level	Units	2016 Sitewide Result	Resample Date	2018 Resample Result
PW-94A	Arsenic, Dissolved	10	µg/L	12.6	--	--
	Arsenic, Total	10	µg/L	12.7	10/17/2018	11.9
	Fluoride	4	mg/L	7.04	6/7/2018	6.26
PW-95A	Fluoride	4	mg/L	9.84	10/4/2018	4.52
TMW-3	Arsenic, Total	10	µg/L	11.5	10/4/2018	18.9
	Beryllium, Dissolved	1	µg/L	5.37	--	--
	Beryllium, Total	1	µg/L	6.13	10/4/2018	5.61
TMW-5	Arsenic, Dissolved	10	µg/L	86	--	--
	Arsenic, Total	10	µg/L	71.6	10/4/2018	34.5
	Beryllium, Dissolved	1	µg/L	1.44	--	--
	Beryllium, Total	1	µg/L	1.63	10/4/2018	2.18

Notes:

-- = not analyzed; dissolved constituents were not resampled

µg/L = microgram per liter

J = estimated value

mg/L = milligram per liter

Bold indicates detected concentration meets or exceeds the cleanup standard.

Table 8. Comparison of Groundwater and Surface Water CVOC and Inorganic Parameter Concentrations for Murder Creek in 2018
ATI Millersburg Operations, Oregon

Parameter	Units	Spring						Fall					
		Upstream		Midstream		Downstream		Upstream		Midstream		Downstream	
		PW-76A	MC-U	PW-77A	MC-M	PW-79A	MC-D	PW-76A	MC-U	PW-77A	MC-M	PW-79A	MC-D
CVOCs													
1,1,1-trichloroethane (TCA)	µg/L	0.400 U	0.400 U	0.400 U	0.400 U	16.6	2.43	0.400 U	0.400 U	0.400 U	6.45	19.1	1.200
1,1-dichloroethane (DCA)	µg/L	0.400 U	0.400 U	37.8	0.400 U	13.3	0.492	0.400 U	0.400 U	40.4	0.892	21.3	0.252 J
1,1-dichloroethene (DCE)	µg/L	0.400 U	0.400 U	17.7	0.400 U	12.9	0.380 J	0.400 U	0.400 U	17.9	0.554	15.2	0.400 U
cis-1,2-dichloroethene	µg/L	0.400 U	0.400 U	2.03	0.400 U	1.59	0.400 U	0.400 U	0.400 U	1.95	0.400 U	1.81	0.400 U
Tetrachloroethene (PCE)	µg/L	0.400 U	0.400 U	0.400 U	0.400 U	0.798	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.680	0.400 U
Trichloroethene (TCE)	µg/L	0.400 U	0.400 U	1.42	0.400 U	1.84	0.400 U	0.400 U	0.400 U	1.37	0.400 U	1.88	0.400 U
Vinyl Chloride (VC)	µg/L	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	3.66	0.400 U	0.400 U	0.400 U
Inorganics													
Fluoride	mg/L	1.00 U	1.00 U	1.00 U	1.00 U	1.15	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	2.00	1.00 U
Nitrate	mg/L	0.276	0.752	0.325	0.694	2.51	7.30	0.344	0.250 U	0.250 U	4.57	2.29	1.29

Notes:

µg/L = microgram per liter

CVOC = chlorinated volatile organic compound

J = estimated concentration

MC = Murder Creek

mg/L = milligram per liter

U = not detected at the reporting limit

Groundwater concentrations are from monitoring wells located nearest the surface water sample location.

Surface water cleanup standards:

TCA = 18,000 µg/L

cis-1,2-DCE = 11,600 µg/L

VC = none

DCA = none

PCE = 840 µg/L

Fluoride = none

DCE = 11,600 µg/L

TCE = 21,900 µg/L

Nitrate = none

Table 9. Comparison of Groundwater and Surface Water CVOC and Inorganic Parameter Concentrations for Truax Creek in 2018
ATI Millersburg Operations, Oregon

Parameter	Units	Spring 2018				Fall 2018			
		Upstream		Downstream		Upstream		Downstream	
		PW-75A	TC-U	PW-03A	TC-D	PW-75A	TC-U	PW-03A	TC-D
CVOCs									
1,1,1-trichloroethane (TCA)	µg/L	65.3	0.400 U	0.400 U	0.400 U	28.9	0.400 U	0.400 U	0.400
1,1-dichloroethane (DCA)	µg/L	8.06	0.400 U	0.580	0.400 U	5.70	0.400 U	0.798	0.400
1,1-dichloroethene (DCE)	µg/L	4.19	0.400 U	2.32	0.230 J	3.97	0.400 U	2.66	0.250 J
cis-1,2-dichloroethene	µg/L	0.400 U	0.400 U	1.46	0.416	0.400 U	0.400 U	1.85	0.630
Tetrachloroethene (PCE)	µg/L	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400 U	0.400
Trichloroethene (TCE)	µg/L	0.400 U	0.400 U	0.720	0.400 U	0.400 U	0.400 U	1.13	0.230 J
Vinyl Chloride (VC)	µg/L	0.400 U	0.400 U	0.390 J	0.400 U	0.400 U	0.400 U	0.335 J	0.350 J
Inorganics									
Ammonia	mg/L	NA	0.0210	133	0.259	NA	0.0200 U	163	0.155

Notes:

µg/L = microgram per liter

CVOC = chlorinated volatile organic compound

J = estimated concentration

mg/L = milligram per liter

NA = not analyzed

TC = Truax Creek

U = not detected at the reporting limit

Groundwater concentrations are from monitoring wells located nearest the surface water sample location.

Surface water cleanup standards:

TCA = 18,000 µg/L

cis-1,2-DCE = 11,600 µg/L

VC = none

DCA = none

PCE = 840 µg/L

Ammonia = function based value dependant on pH and temperature,

DCE = 11,600 µg/L

TCE = 21,900 µg/L

ammonia example = 28 mg/L (pH at 6.8, temperature at 15 degrees Celsius)

Table 10. Summary of CVOC Recovery in the Fabrication Area Extraction Wells in 2018

ATI Millersburg Operations, Oregon

Extraction Well	Total Volume Extracted (gallons)	Total CVOC Mass Extracted (pounds)	Proportion of Mass Extracted (percent)
FW-1	5,354,221	35.21	90.3
FW-2	2,653,044	0.41	1.0
FW-3	1,170,132	0.06	0.2
FW-4	838,977	3.33	8.5
FW-5	5,458,540	NA	NA
FW-7	--	--	--
Totals	15,474,914	39.0	100

Notes:

FW-7 shutdown on July 30, 2009, per U.S. Environmental Protection Agency approval.

CVOC = chlorinated volatile organic compound

NA = not applicable

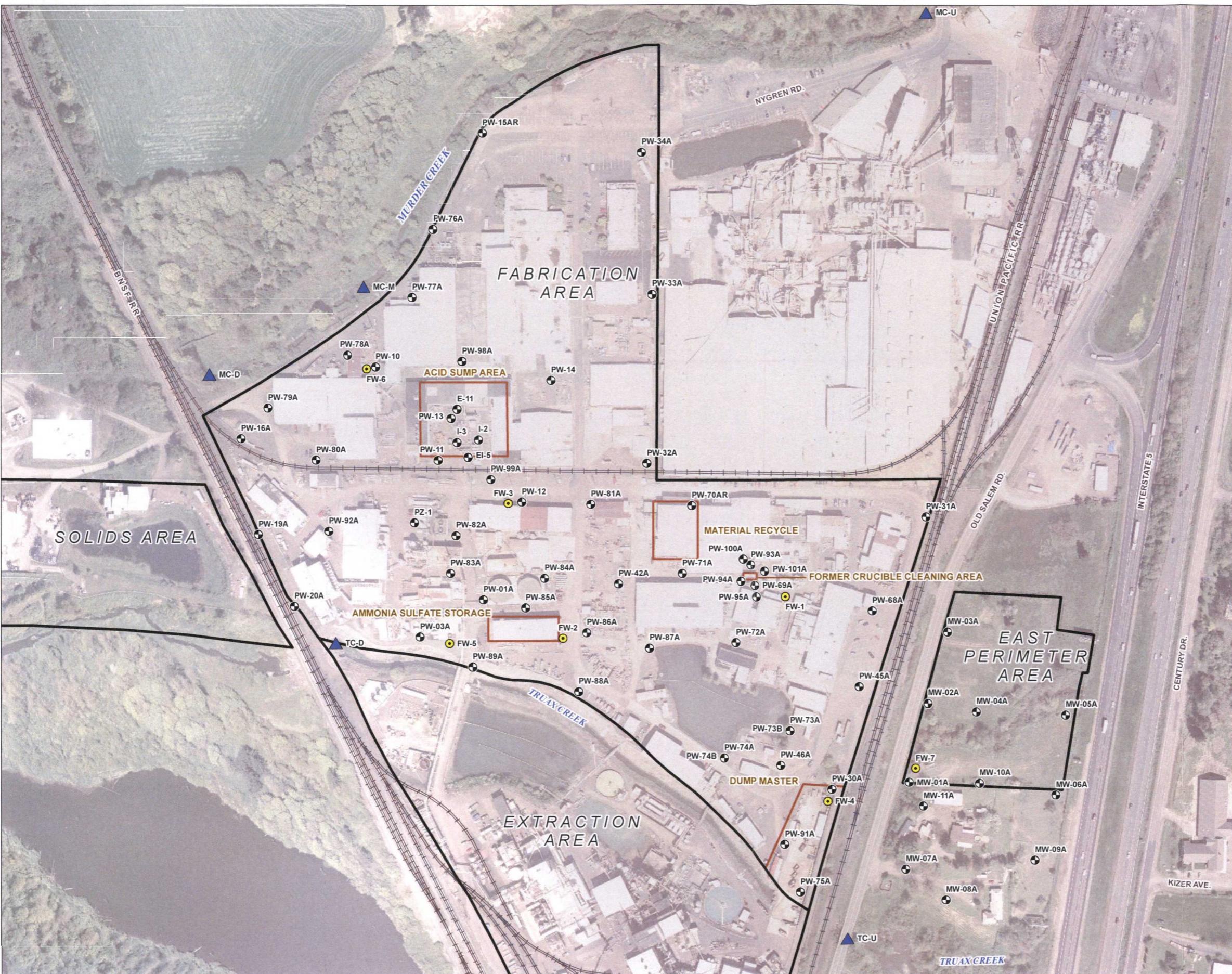
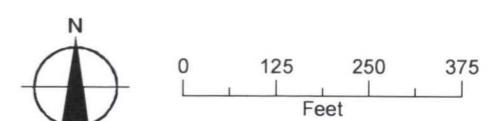


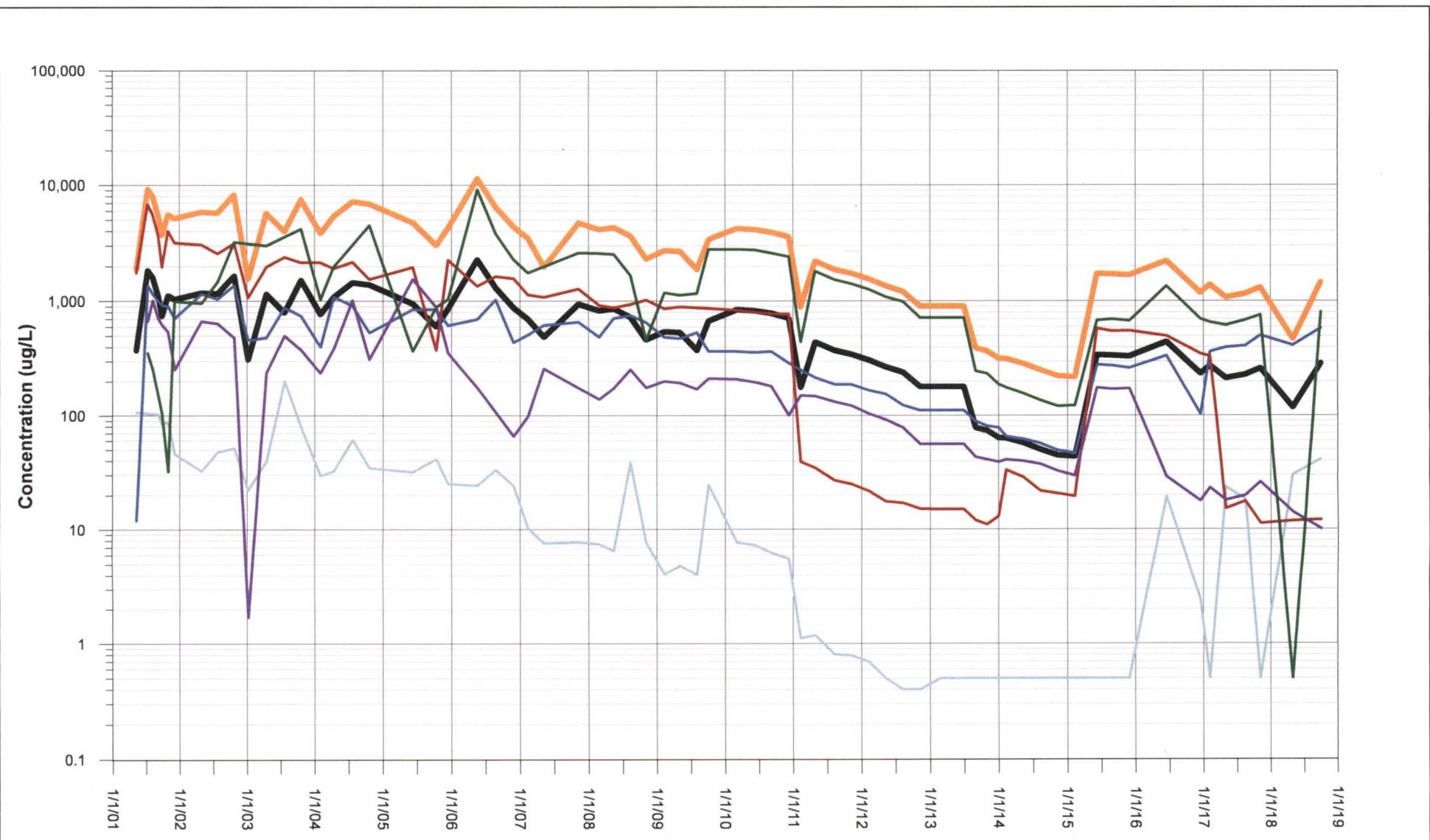
FIGURE 1
Fabrication Area Monitoring Locations
ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
- Extraction Well
- ▲ Surface Water Sample Location
- Remediation Area
- Railroad

NOTE:
TMW-1 and TMW-4 removed August 2016. I-2, I-3, EI-5 added to monitoring network in fall of 2016.





Legend:

- FW-1 — FW-4 — Average CVOC
- FW-2 — FW-7 — Total CVOC
- FW-3

Notes:

CVOC = chlorinated volatile organic compound
ug/L = microgram per liter

FIGURE 2
Extraction Well CVOC Concentration Recovery Trends, 2001-2018
ATI Millersburg Operations, Oregon

FIGURE 3**Spring 2018 Groundwater****Elevations in Fabrication Area**

ATI Millersburg Operations, Oregon

**LEGEND**

- Monitoring Well
- Extraction Well
- ~~~~~ Groundwater Contour (dashed where inferred)
- - - Railroad

NOTES:

1. Red Labels = Measured Water Elevation in Feet
2. Purple Labels = Measured Water Elevation in Feet, not used in contouring. Reasons for not including in the contouring are:

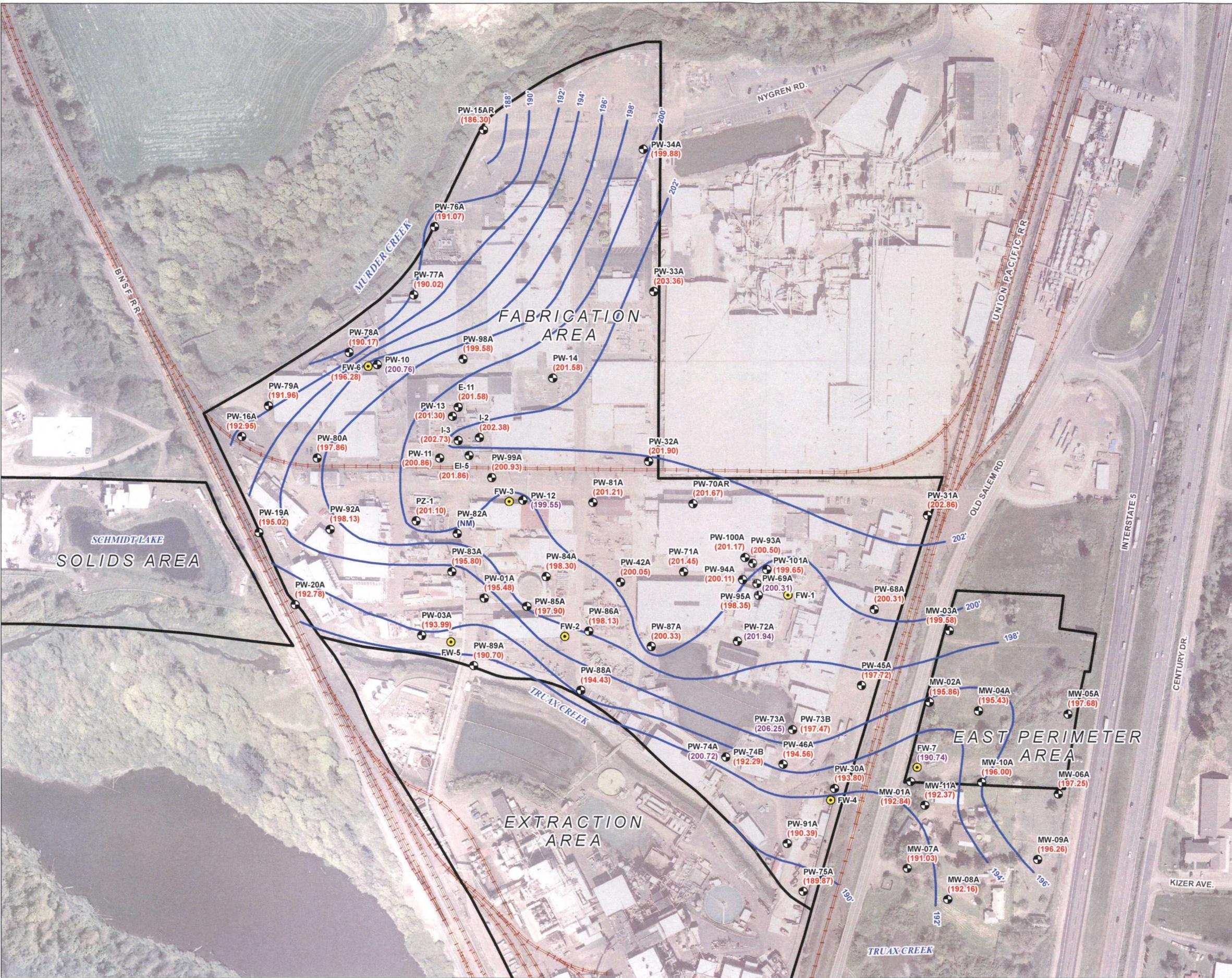
- MW-11A is located near old Hutchinson property. Capped freshwater lines may be leaking. There is also an intermittent stream nearby.
 - PW-12 is near FW-3, which is subject to fouling and is therefore routinely pumped to flush and keep lines open.
 - PW-69A is 3 feet from an outdoor freshwater spraying station that operates 24 hours a day and may leak through cracks in concrete pads.
 - PW-72A, PW-73A, and PW-74A are likely hydraulically connected to the cooling pond.
 - Per EPA's request, FW-6 is used for contouring instead of PW-10.
 - Extraction wells are not used for groundwater contouring.
3. NM = not measured.



0 125 250 375
Feet

FIGURE 4**Fall 2018 Groundwater****Elevations in Fabrication Area**

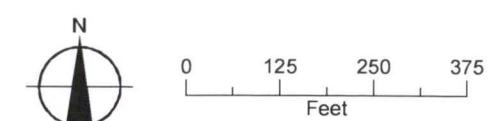
ATI Millersburg Operations, Oregon

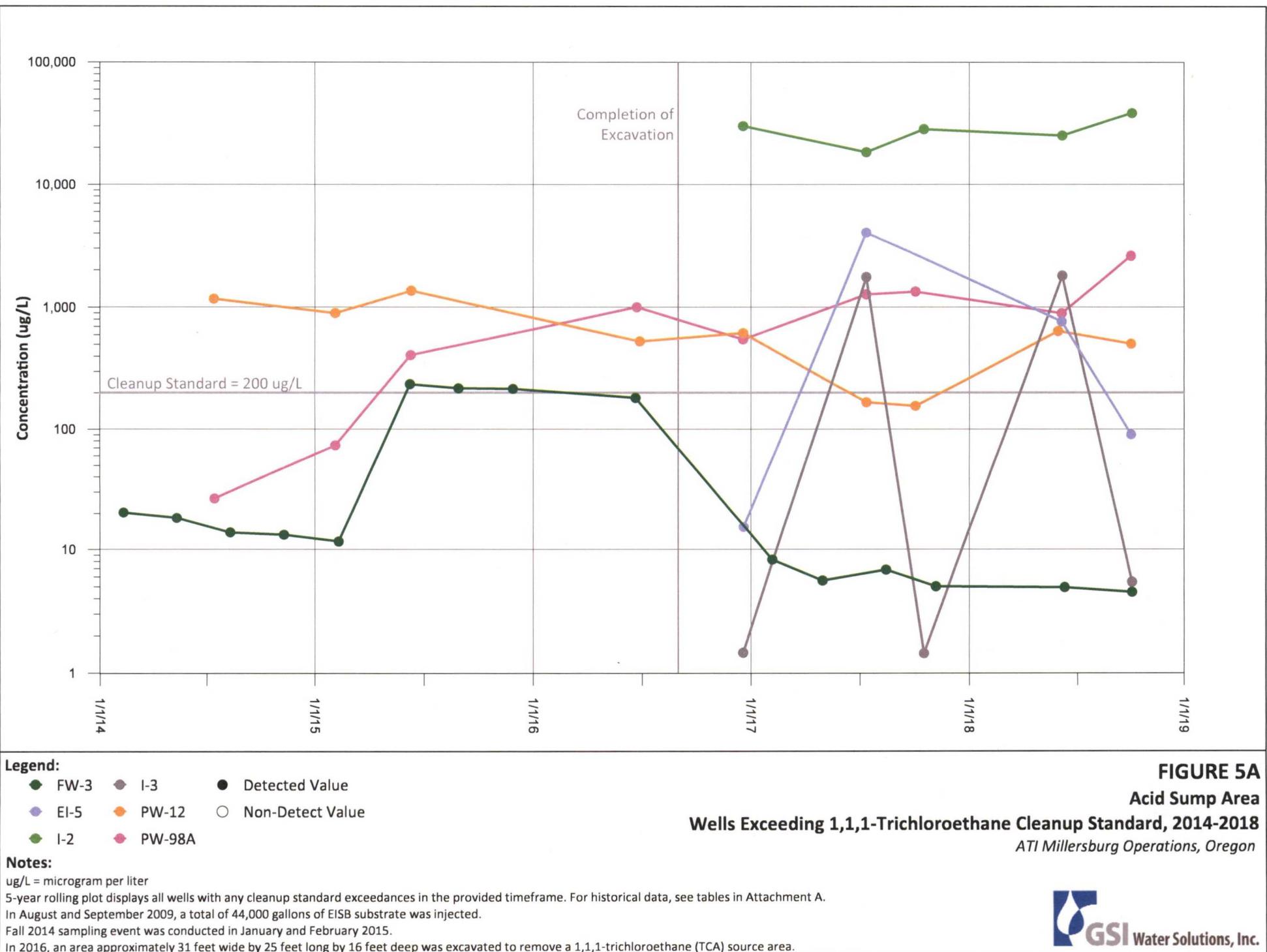
**LEGEND**

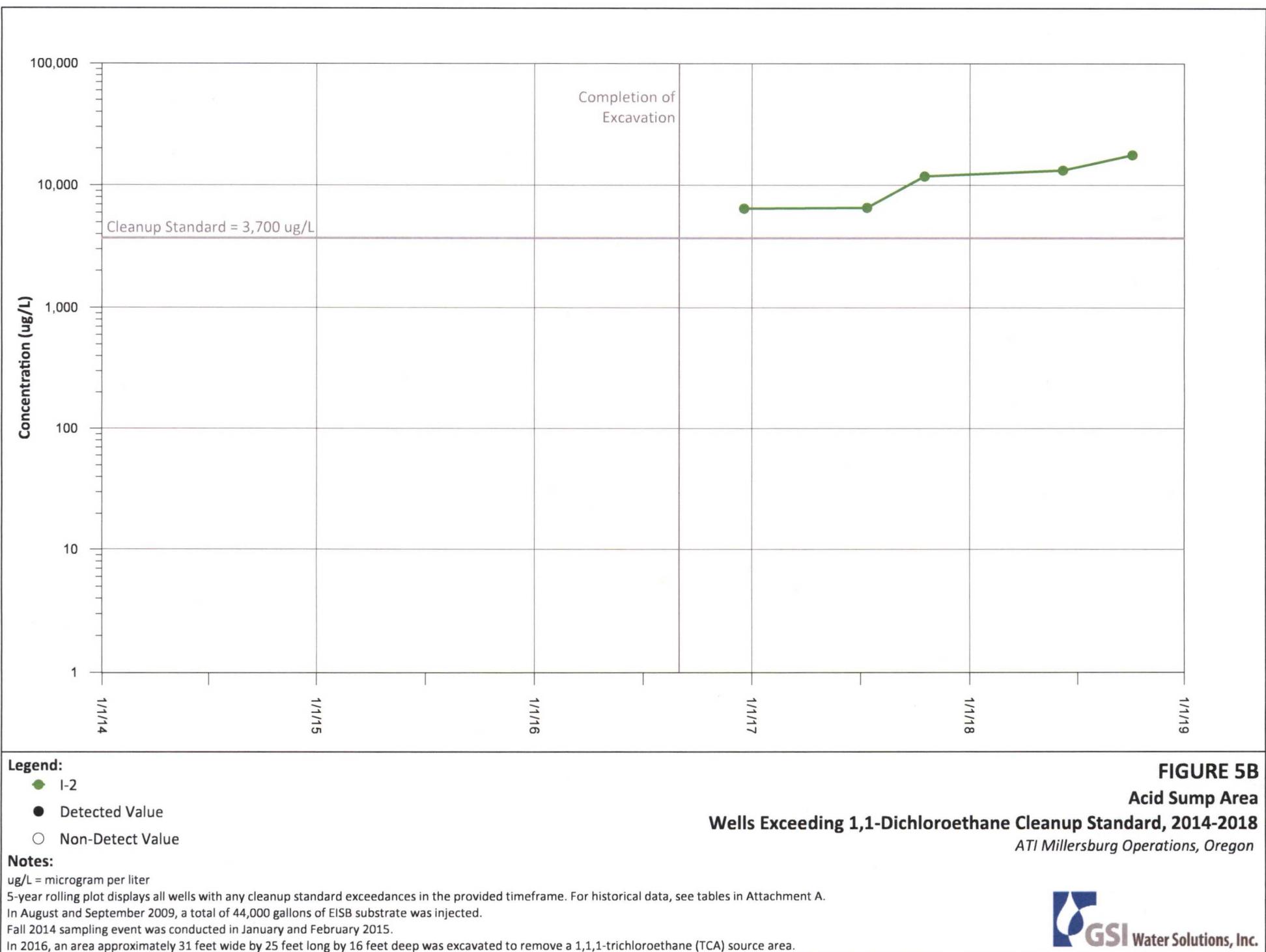
- Monitoring Well
- Extraction Well
- Groundwater Contour (dashed where inferred)
- Railroad

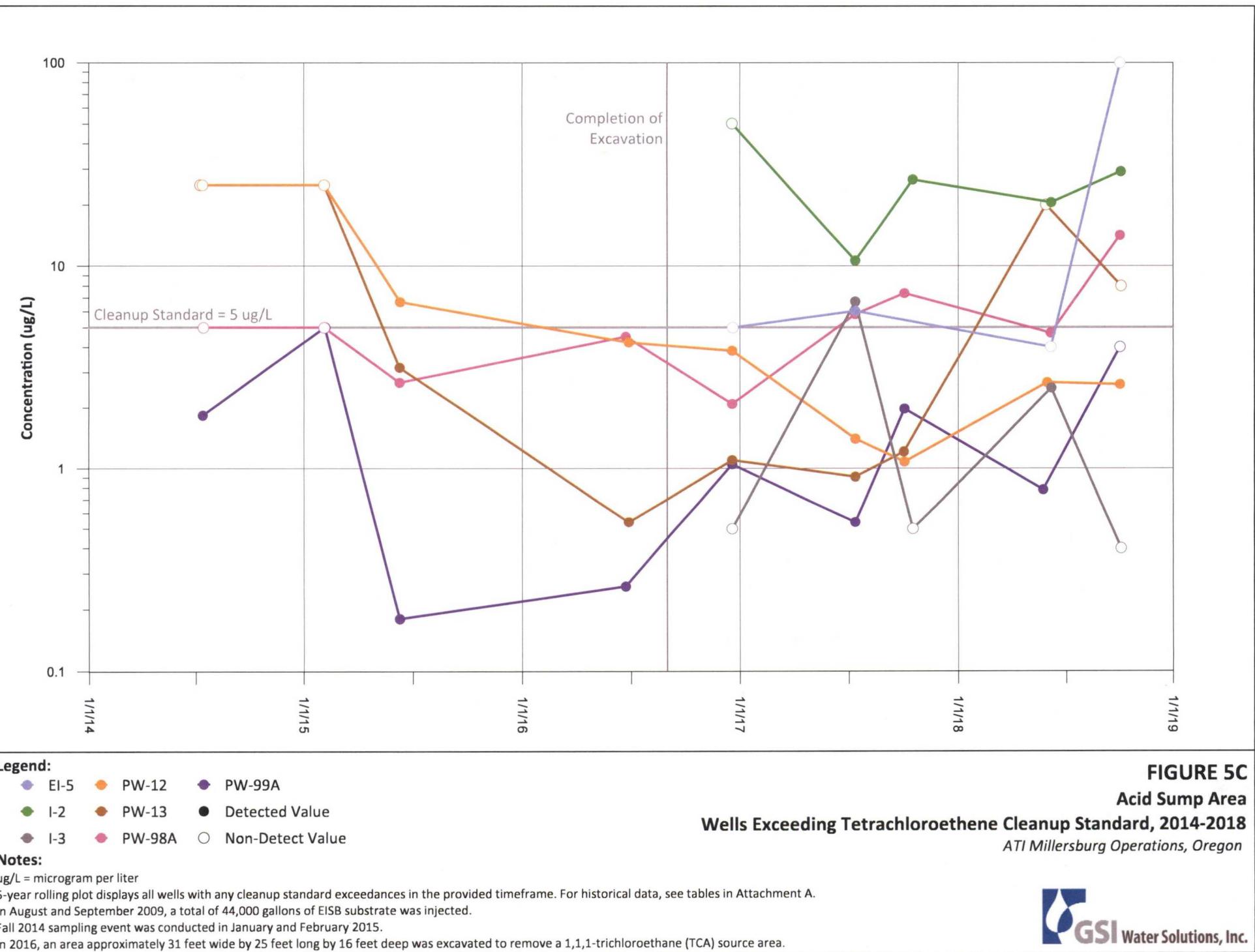
NOTES:

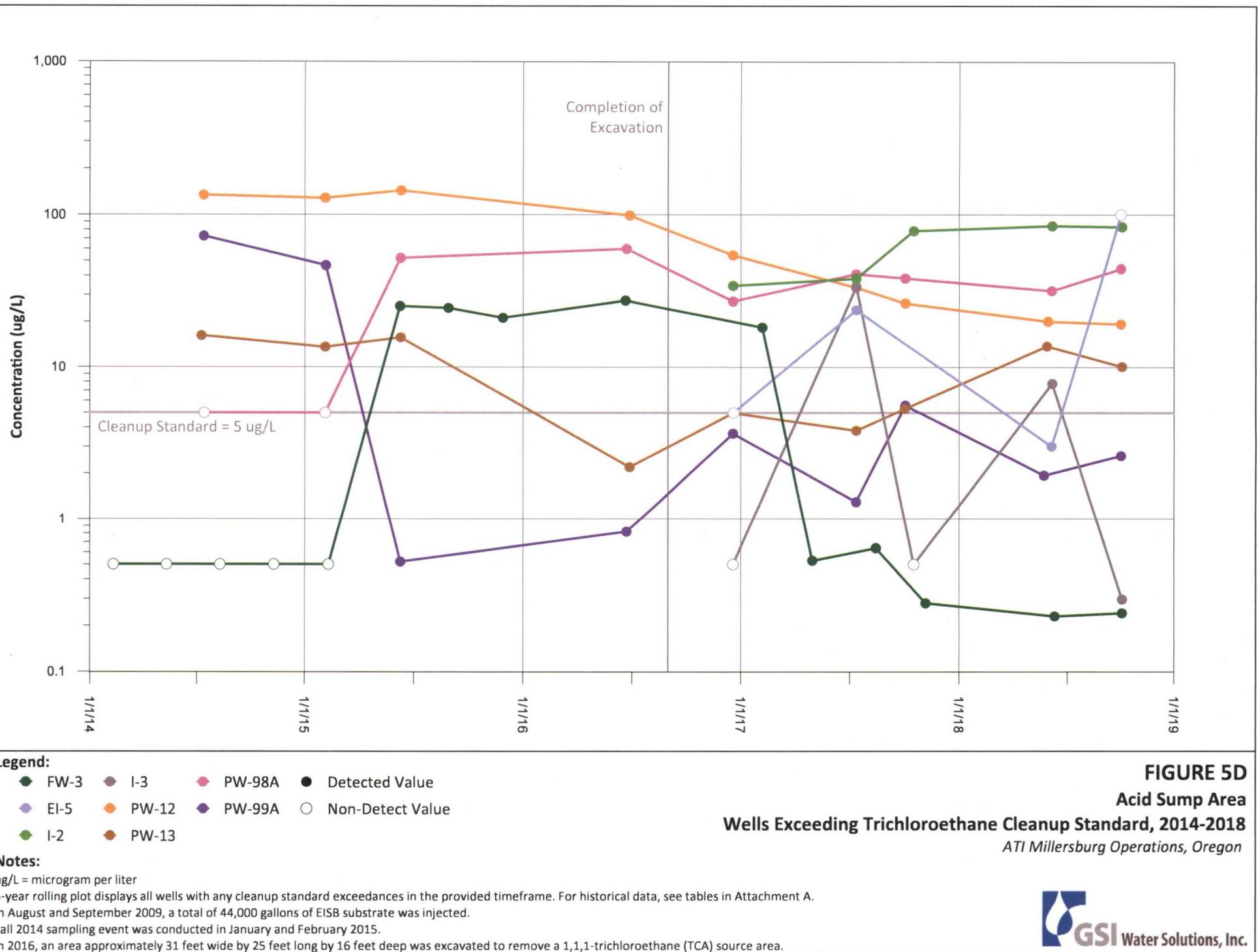
- Red Labels = Measured Water Elevation in Feet
- Purple Labels = Measured Water Elevation in Feet, not used in contouring. Reasons for not including in the contouring are:
 - MW-11A is located near old Hutchinson property. Capped freshwater lines may be leaking. There is also an intermittent stream nearby.
 - PW-12 is near FW-3, which is subject to fouling and is therefore routinely pumped to flush and keep lines open.
 - PW-69A is 3 feet from an outdoor freshwater spraying station that operates 24 hours a day and may leak through cracks in concrete pads.
 - PW-72A, PW-73A, and PW-74A are likely hydraulically connected to the cooling pond.
 - Per EPA's request, FW-6 is used for contouring instead of PW-10.
 - Extraction wells are not used for groundwater contouring.
3. NM = not measured.

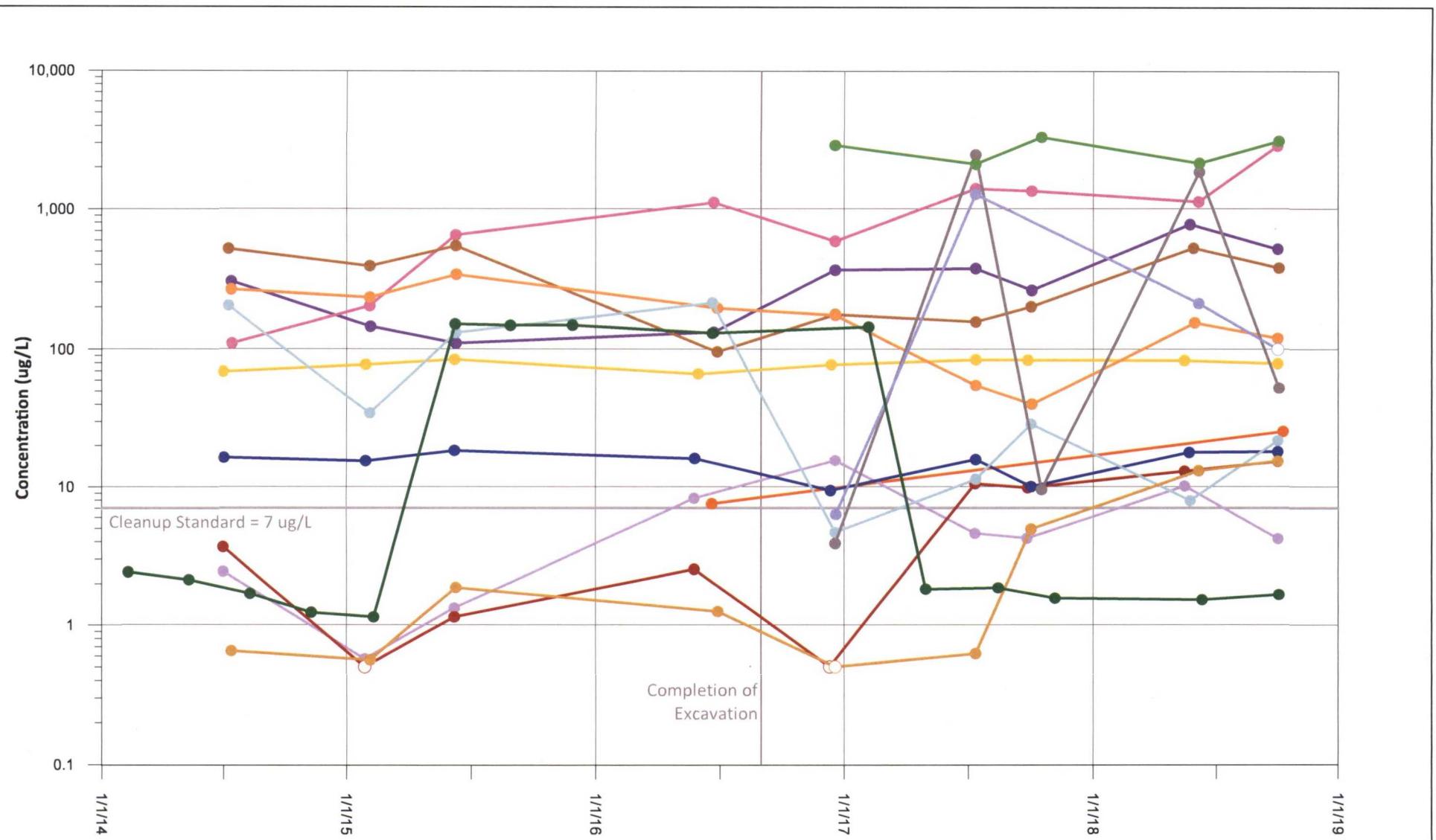











Legend:

FW-3	I-2	PW-12	PW-78A	PW-81A	●	Detected Value
E-11	I-3	PW-13	PW-79A	PW-98A	○	Non-Detect Value
EI-5	PW-11	PW-77A	PW-80A	PW-99A		

Notes:

ug/L = microgram per liter

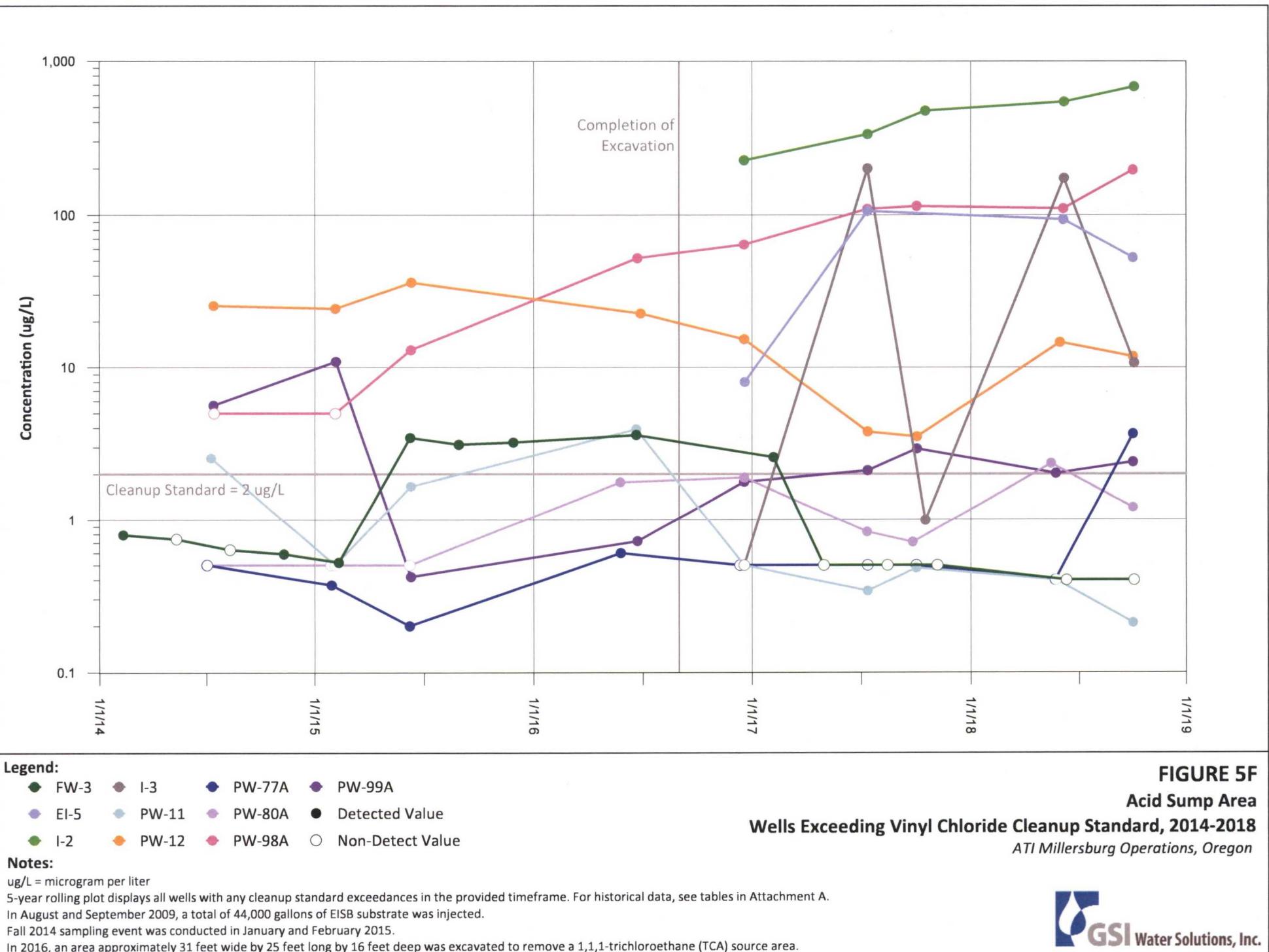
5-year rolling plot displays all wells with any cleanup standard exceedances in the provided timeframe. For historical data, see tables in Attachment A.

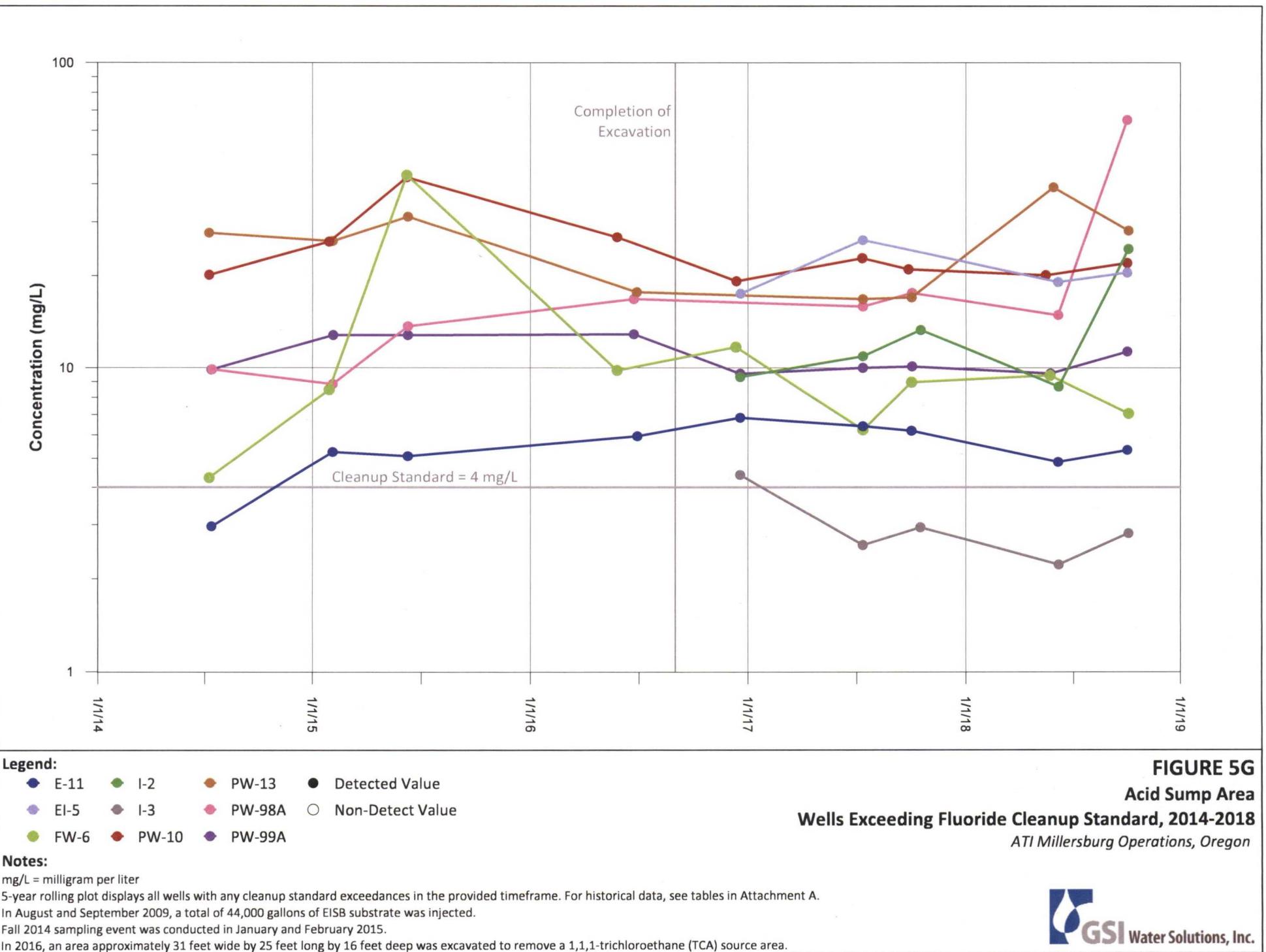
In August and September 2009, a total of 44,000 gallons of EISB substrate was injected.

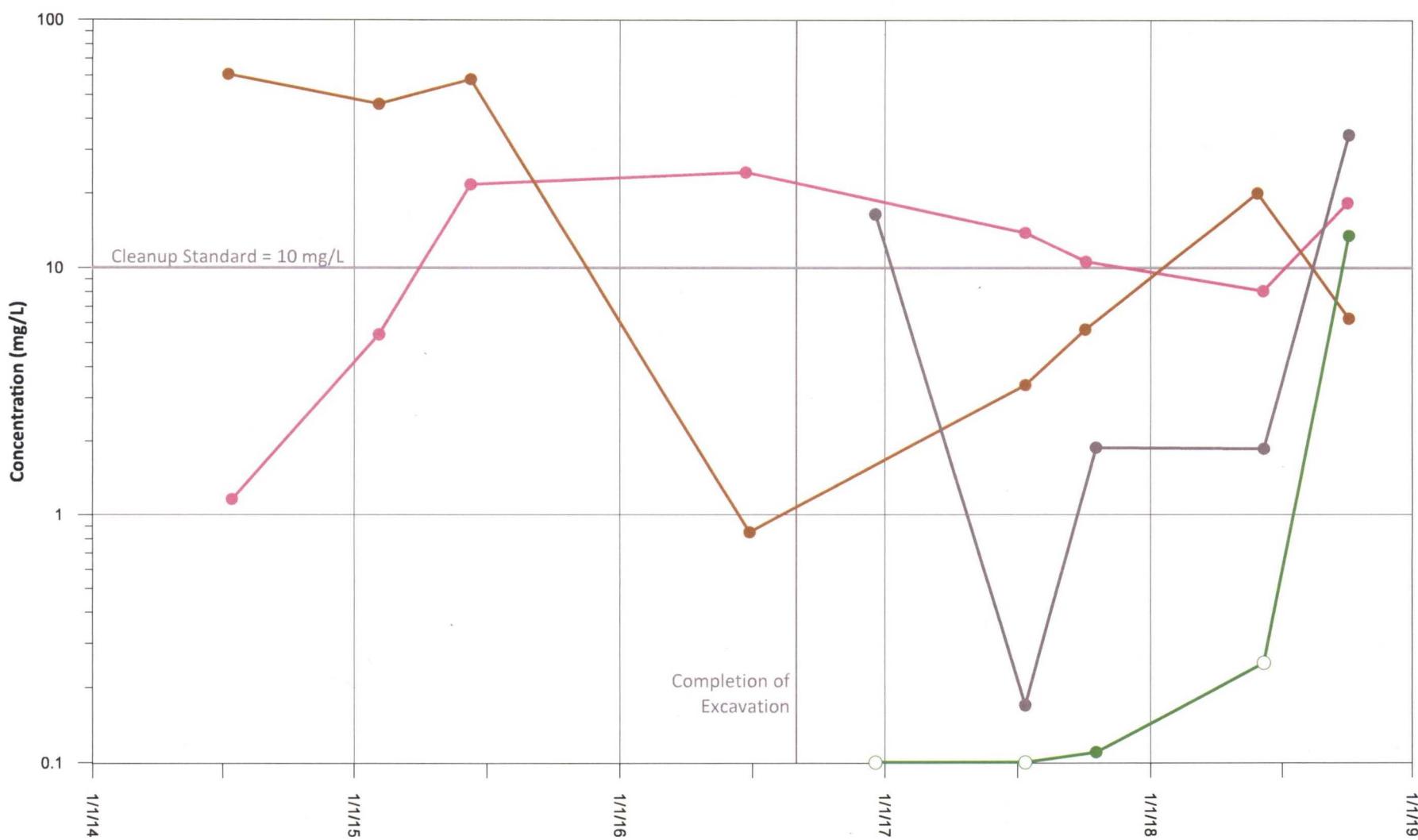
Fall 2014 sampling event was conducted in January and February 2015.

In 2016, an area approximately 31 feet wide by 25 feet long by 16 feet deep was excavated to remove a 1,1,1-trichloroethane (TCA) source area.

FIGURE 5E
Acid Sump Area
Wells Exceeding 1,1-Dichloroethene Cleanup Standard, 2014-2018
ATI Millersburg Operations, Oregon







Legend:

- E-11 ● I-3 ● PW-98A ● Detected Value
- EI-5 ● PW-11 ● PW-99A ○ Non-Detect Value
- I-2 ● PW-13

Notes:

mg/L = milligram per liter

5-year rolling plot displays all wells with any cleanup standard exceedances in the provided timeframe. For historical data, see tables in Attachment A.

In August and September 2009, a total of 44,000 gallons of EISB substrate was injected.

Fall 2014 sampling event was conducted in January and February 2015.

In 2016, an area approximately 31 feet wide by 25 feet long by 16 feet deep was excavated to remove a 1,1,1-trichloroethane (TCA) source area.

FIGURE 5H
Acid Sump Area
Wells Exceeding Nitrate Cleanup Standard, 2014-2018
ATI Millersburg Operations, Oregon

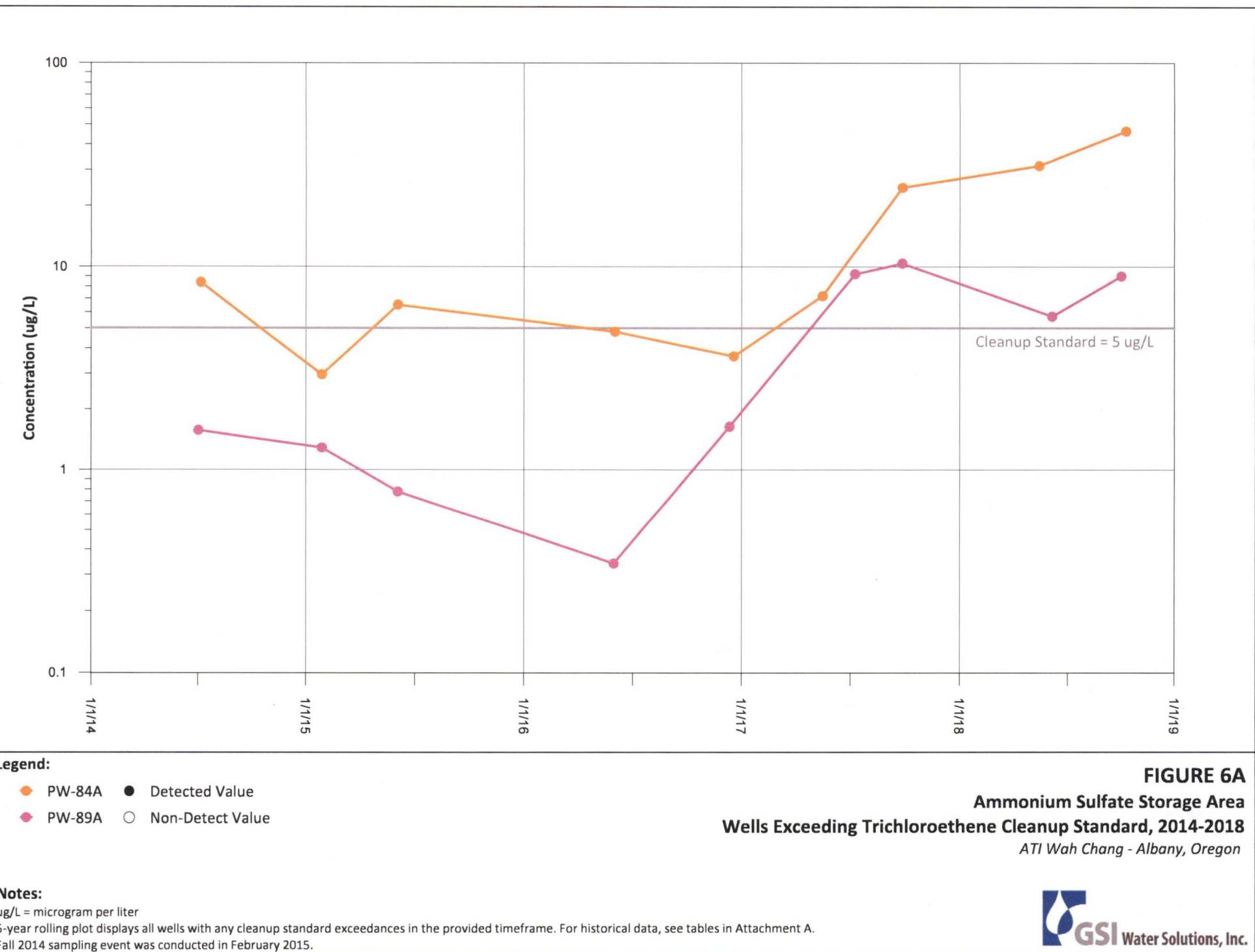
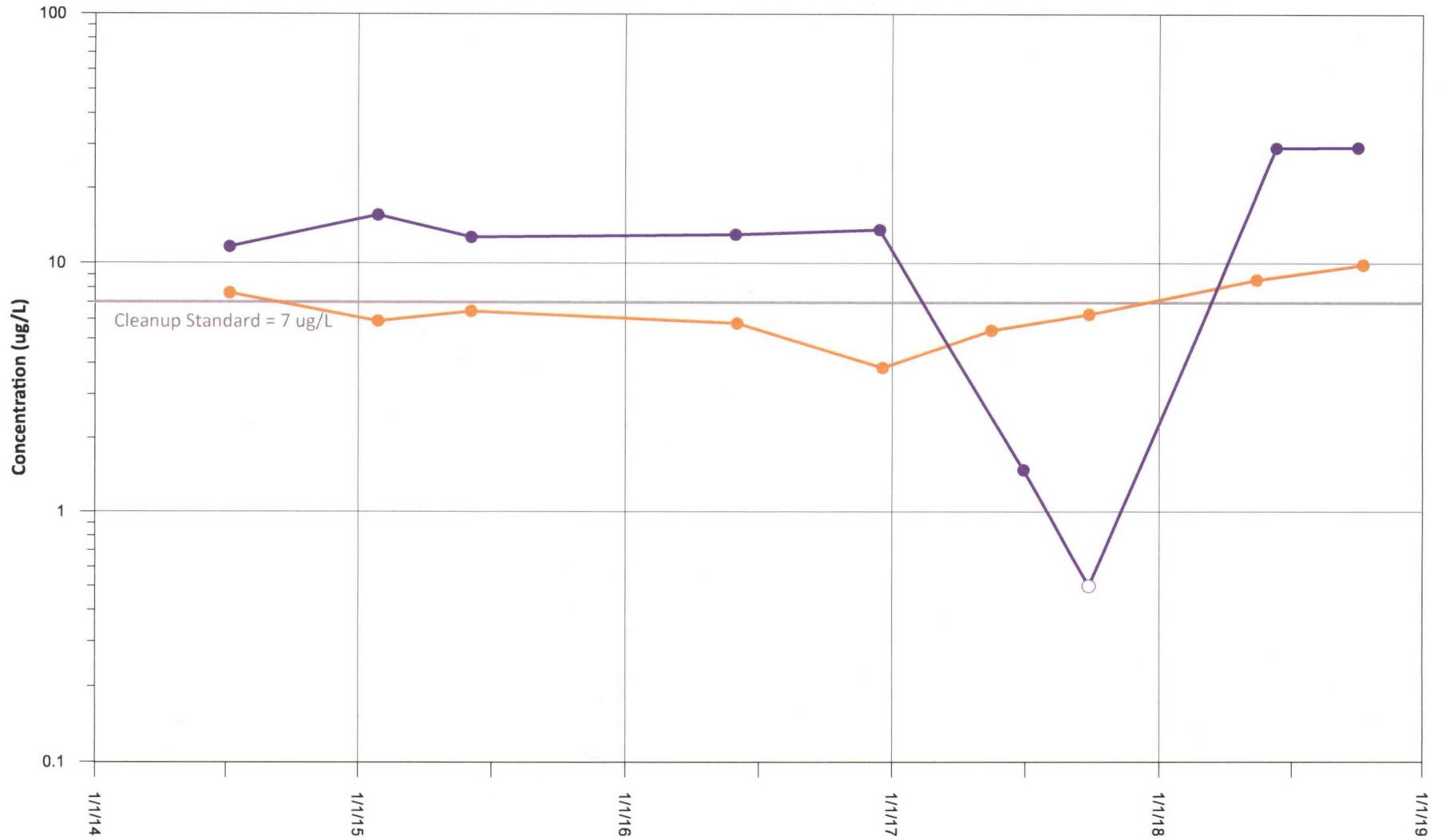


FIGURE 6A
Ammonium Sulfate Storage Area
Wells Exceeding Trichloroethene Cleanup Standard, 2014-2018
ATI Wah Chang - Albany, Oregon



Legend:

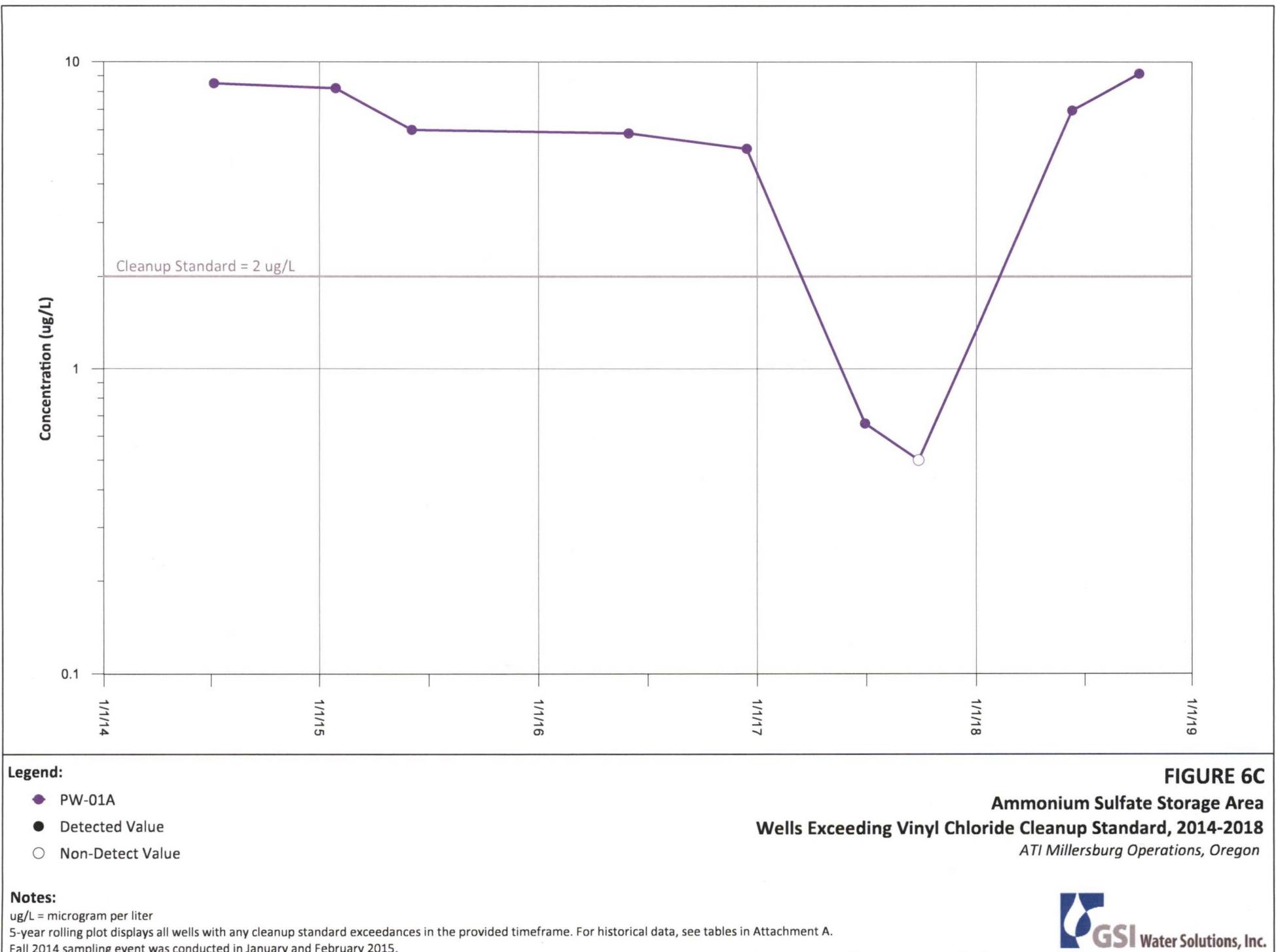
- PW-01A ● Detected Value
- PW-84A ○ Non-Detect Value

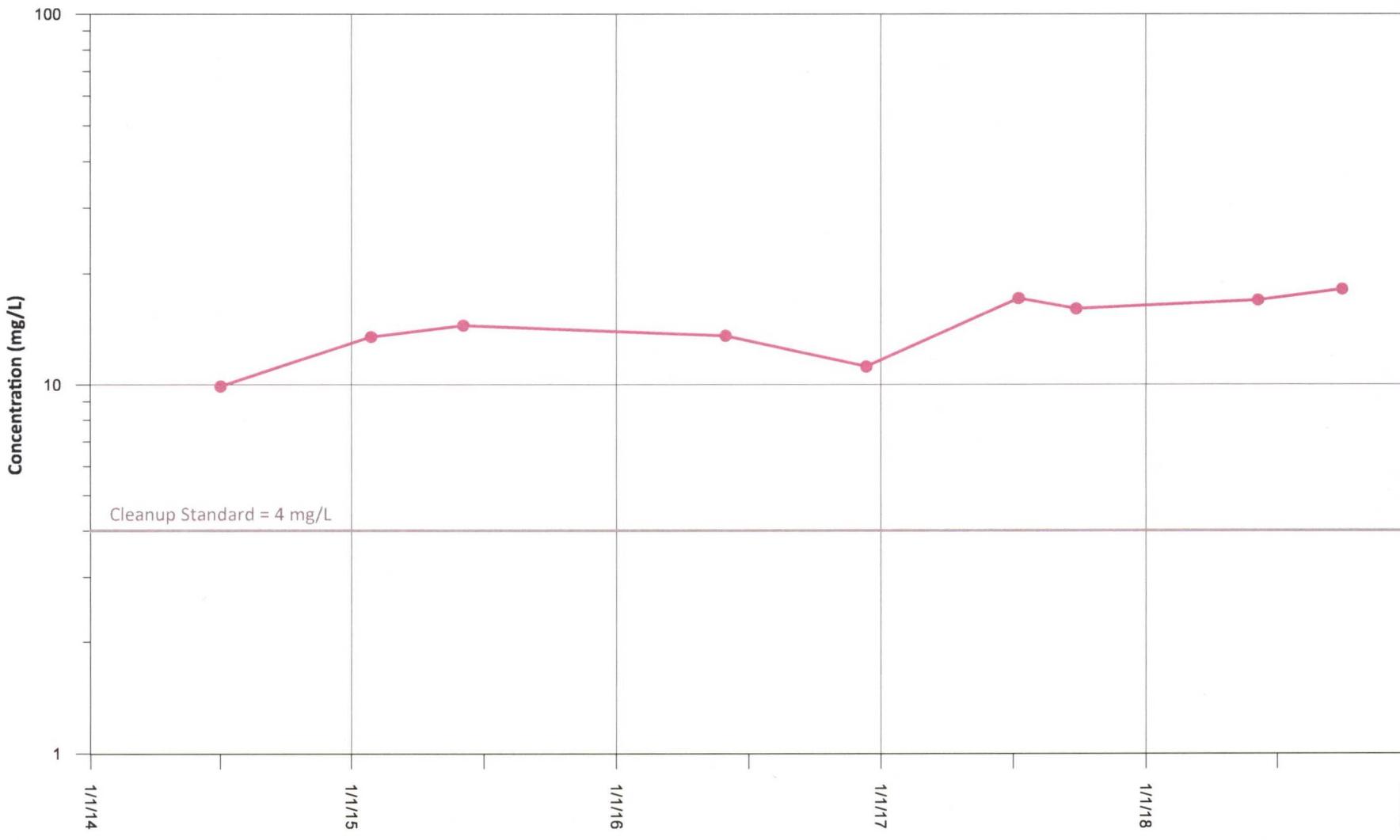
Notes:

ug/L = microgram per liter

5-year rolling plot displays all wells with any cleanup standard exceedances in the provided timeframe. For historical data, see tables in Attachment A.
Fall 2014 sampling event was conducted in January and February 2015.

FIGURE 6B
Ammonium Sulfate Storage Area
Wells Exceeding 1,1-Dichloroethene Cleanup Standard, 2014-2018
ATI Millersburg Operations, Oregon





Legend:

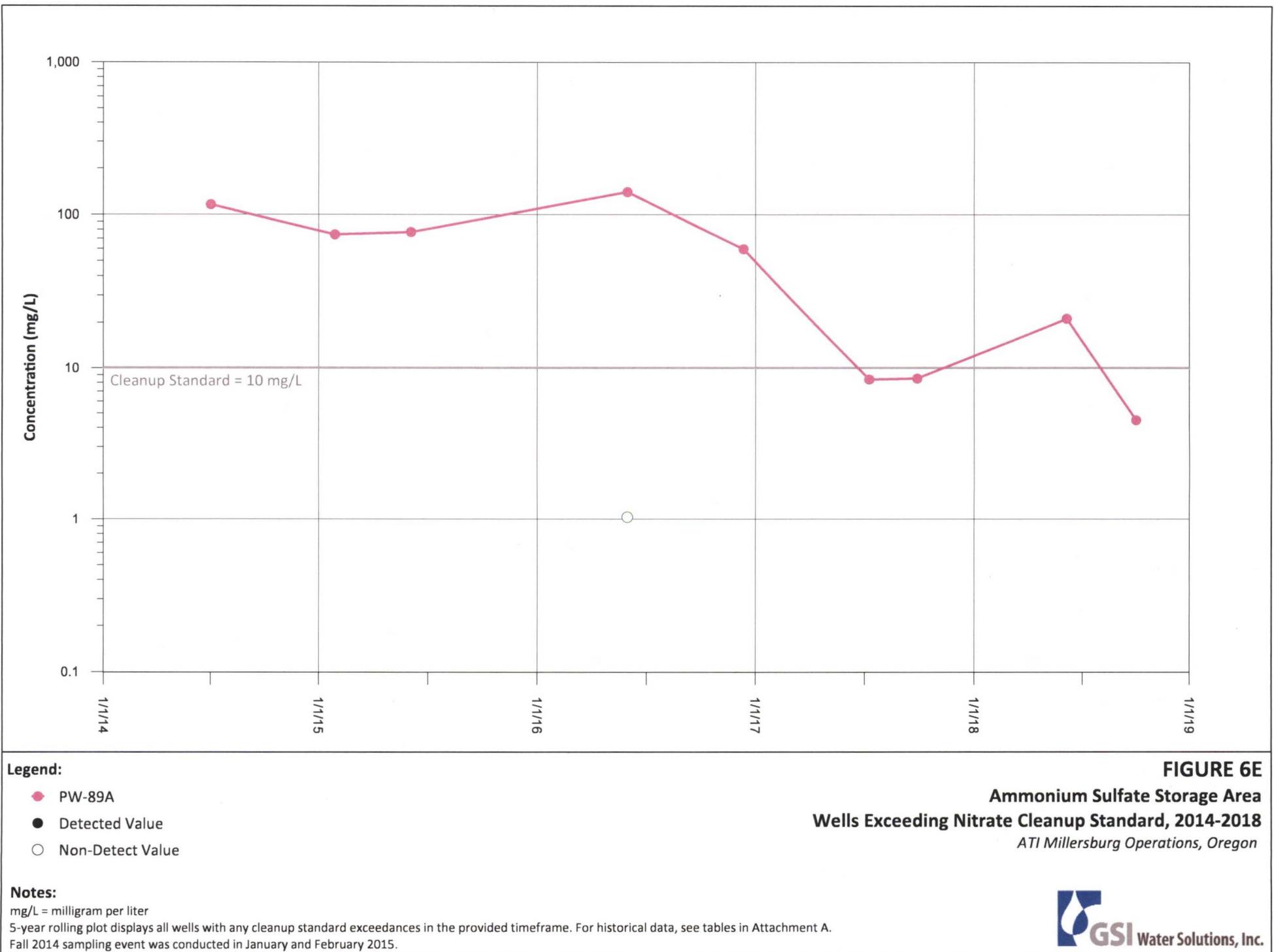
- PW-89A
- Detected Value
- Non-Detect Value

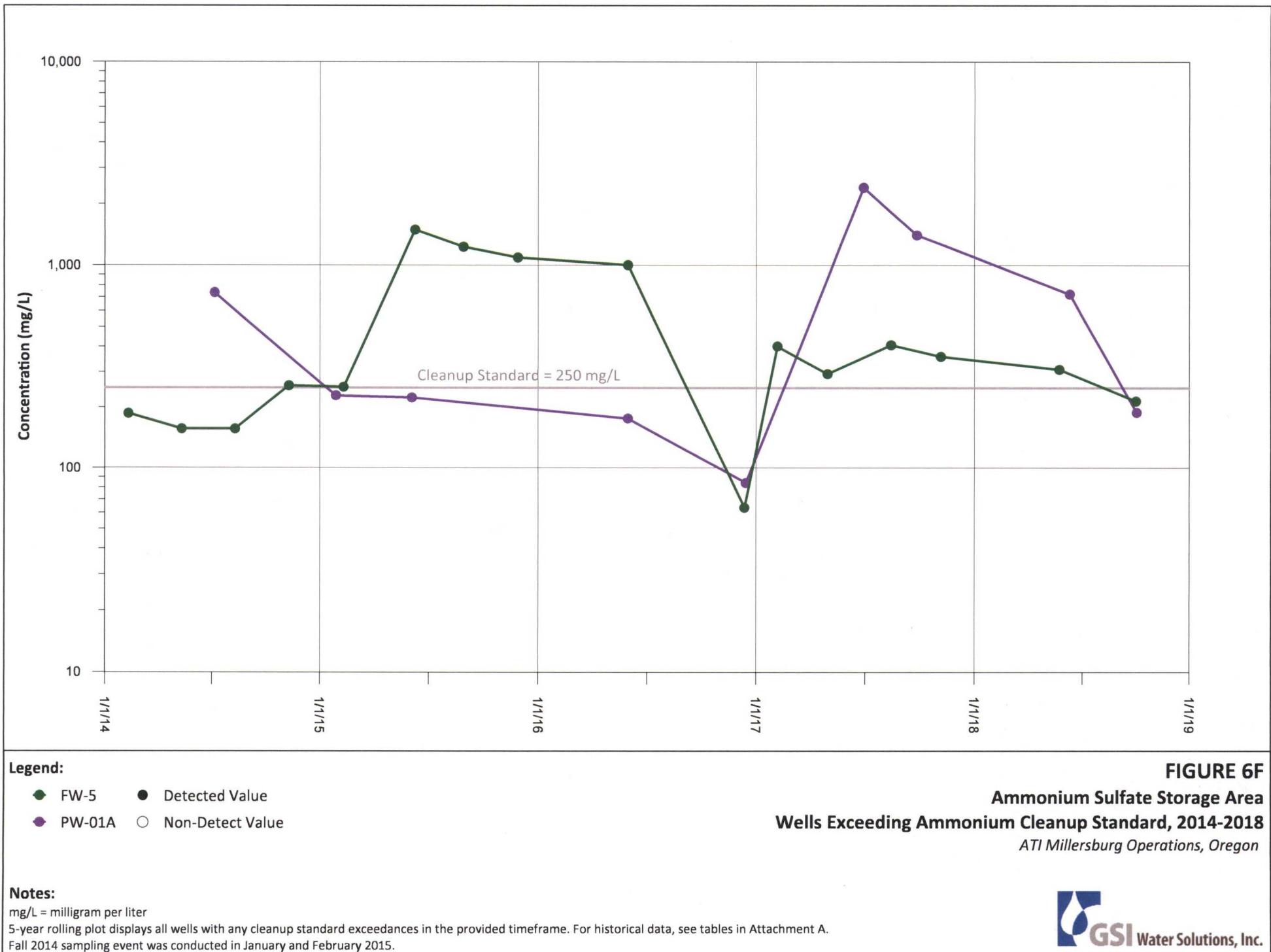
Notes:

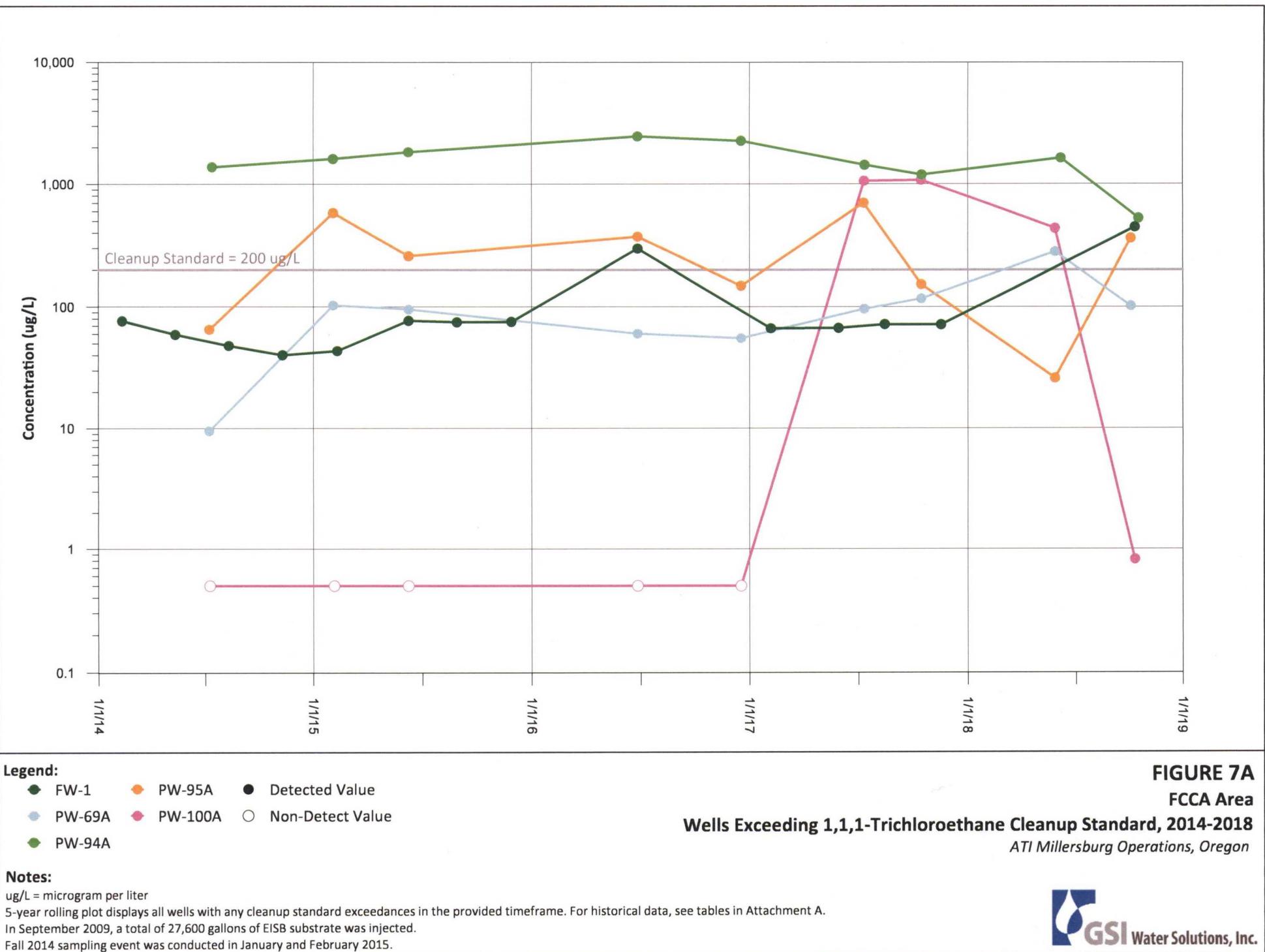
mg/L = milligram per liter

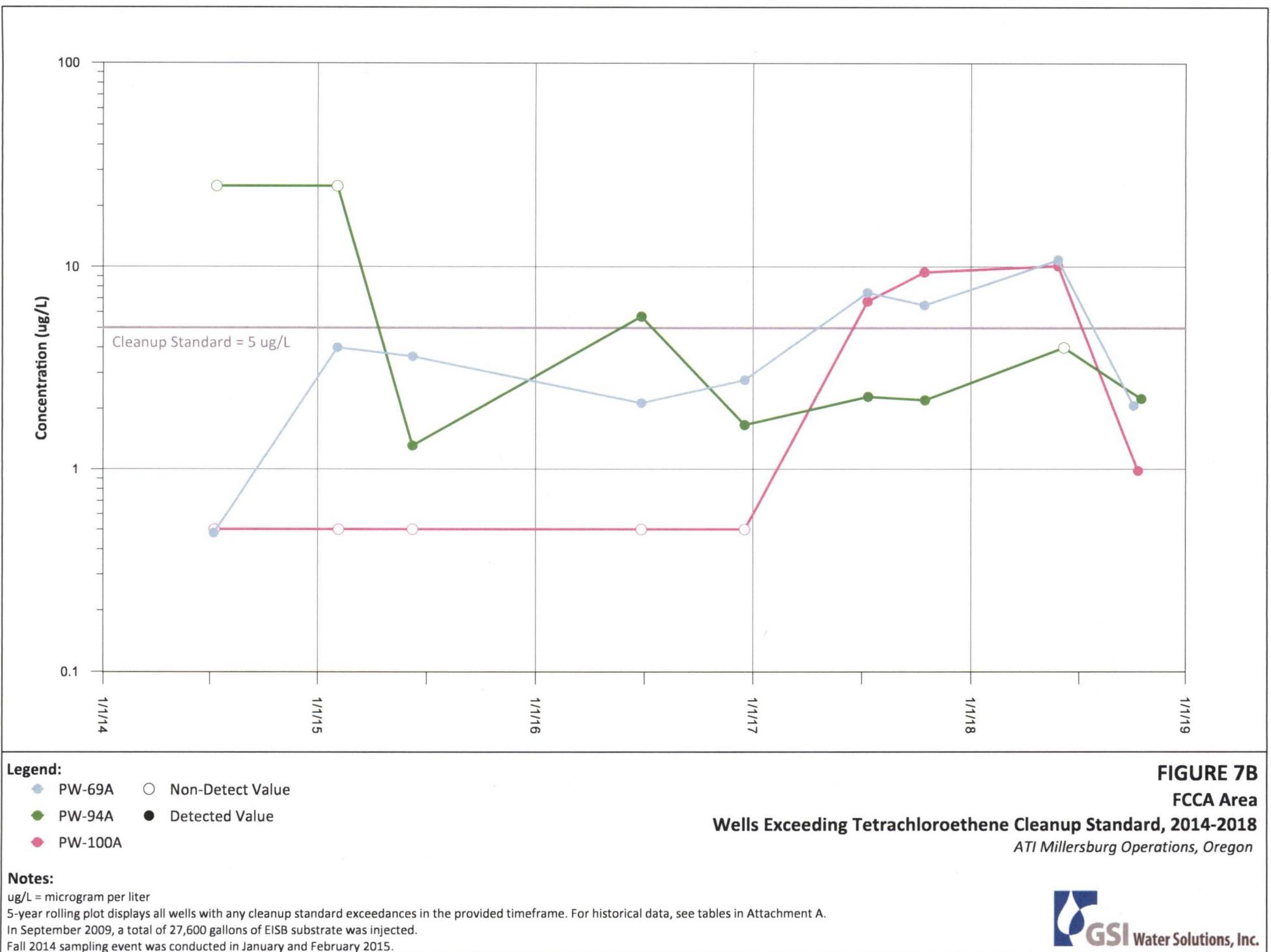
5-year rolling plot displays all wells with any cleanup standard exceedances in the provided timeframe. For historical data, see tables in Attachment A.
Fall 2014 sampling event was conducted in January and February 2015.

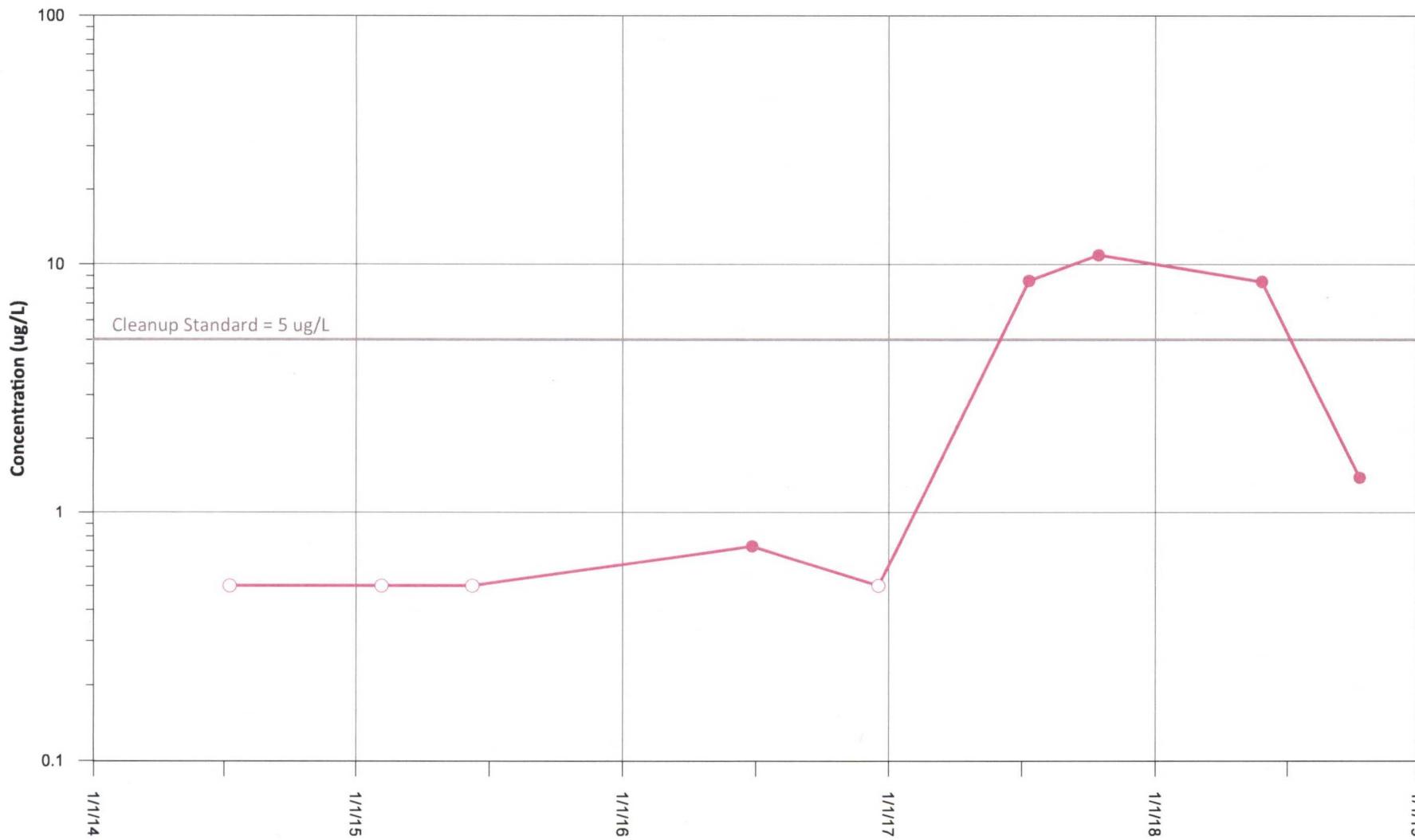
FIGURE 6D
Ammonium Sulfate Storage Area
Wells Exceeding Fluoride Cleanup Standard, 2014-2018
ATI Millersburg Operations, Oregon











Legend:

- PW-100A
- Detected Value
- Non-Detect Value

Notes:

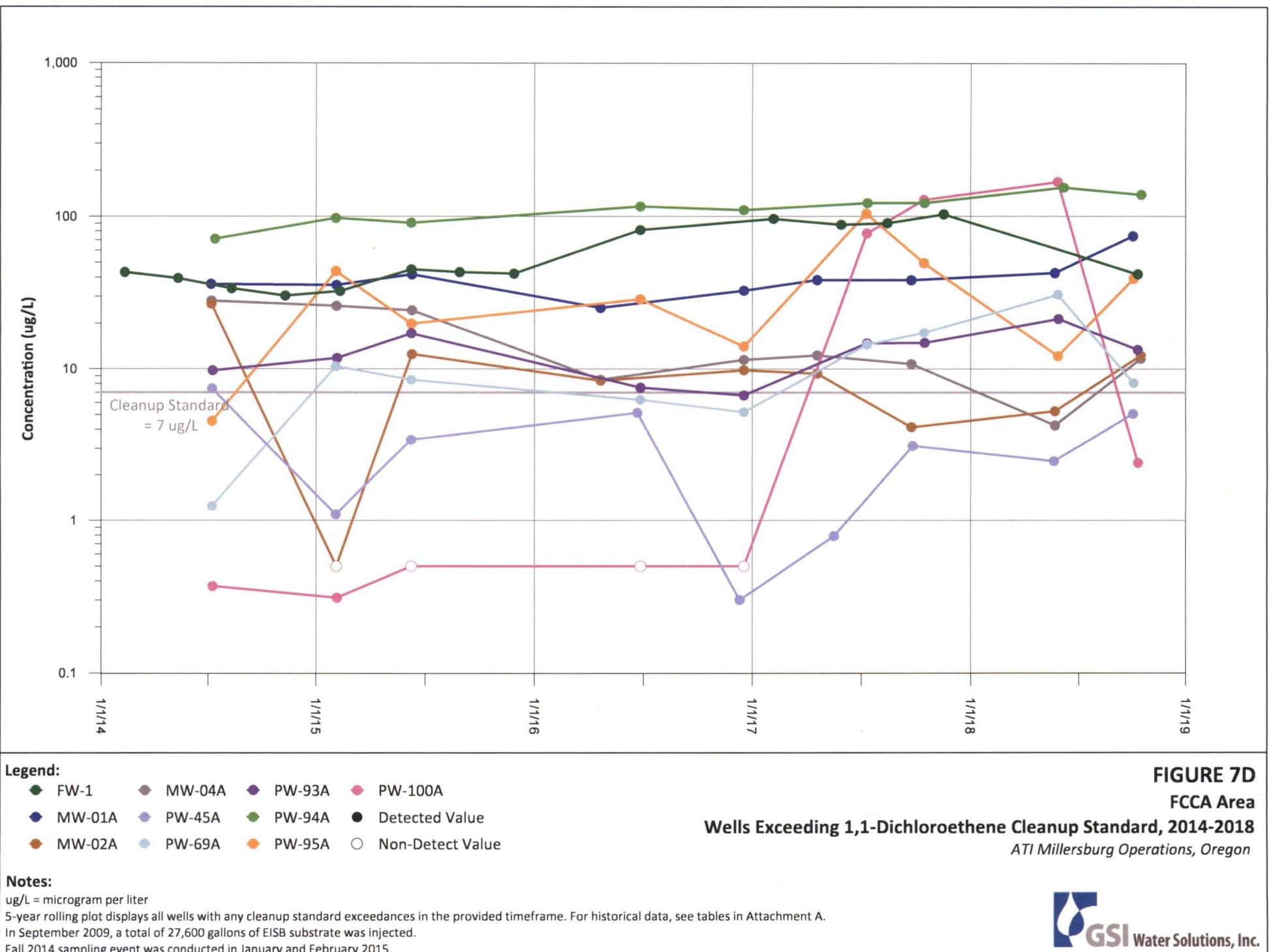
ug/L = microgram per liter

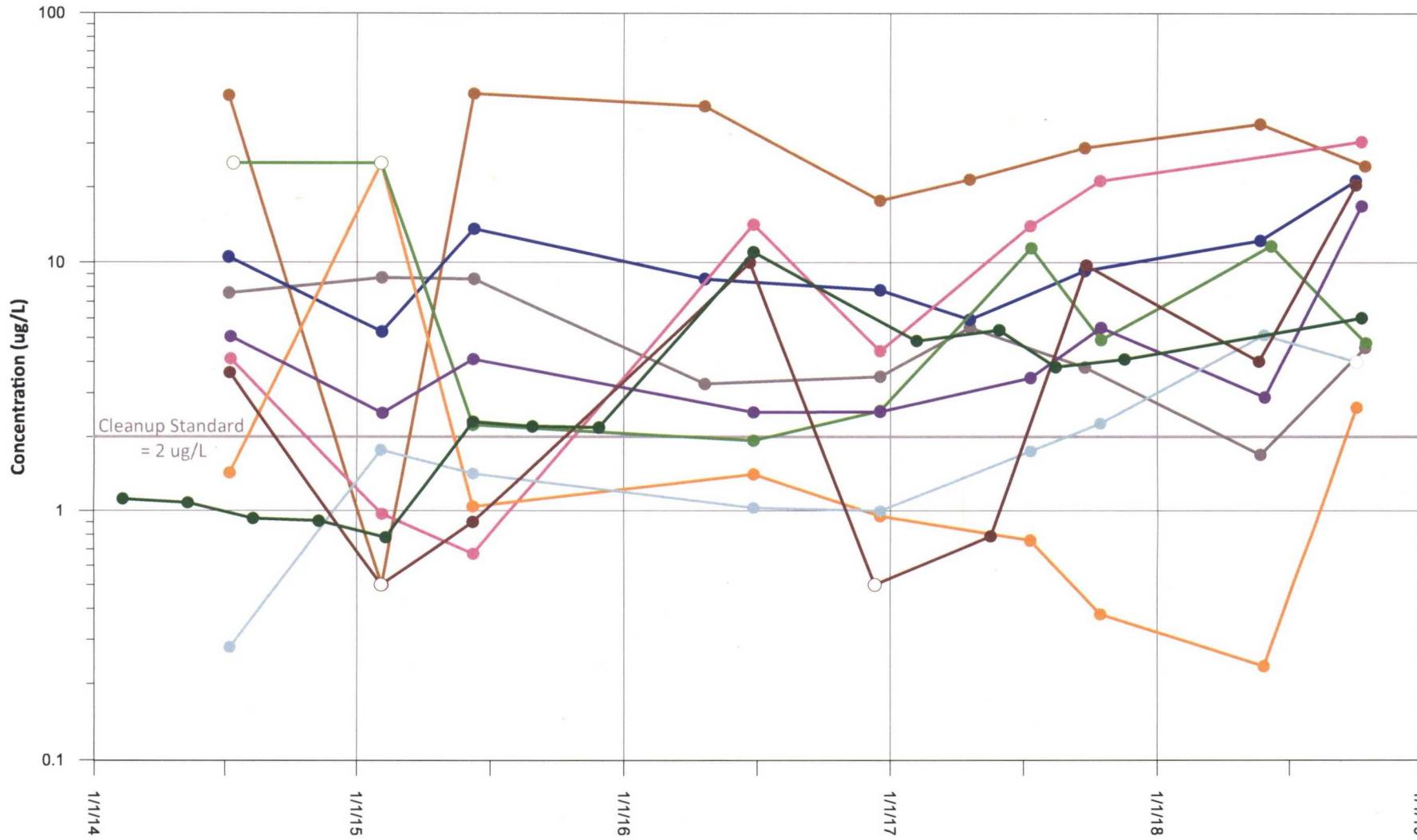
5-year rolling plot displays all wells with any cleanup standard exceedances in the provided timeframe. For historical data, see tables in Attachment A.

In September 2009, a total of 27,600 gallons of EISB substrate was injected.

Fall 2014 sampling event was conducted in January and February 2015.

FIGURE 7C
FCCA Area
Wells Exceeding Trichloroethene Cleanup Standard, 2014-2018
ATI Millersburg Operations, Oregon





Legend:

- FW-1 ● MW-04A ● PW-93A ● PW-100A
- MW-01A ● PW-45A ● PW-94A ● Detected Value
- MW-02A ● PW-69A ● PW-95A ● Non-Detect Value

Notes:

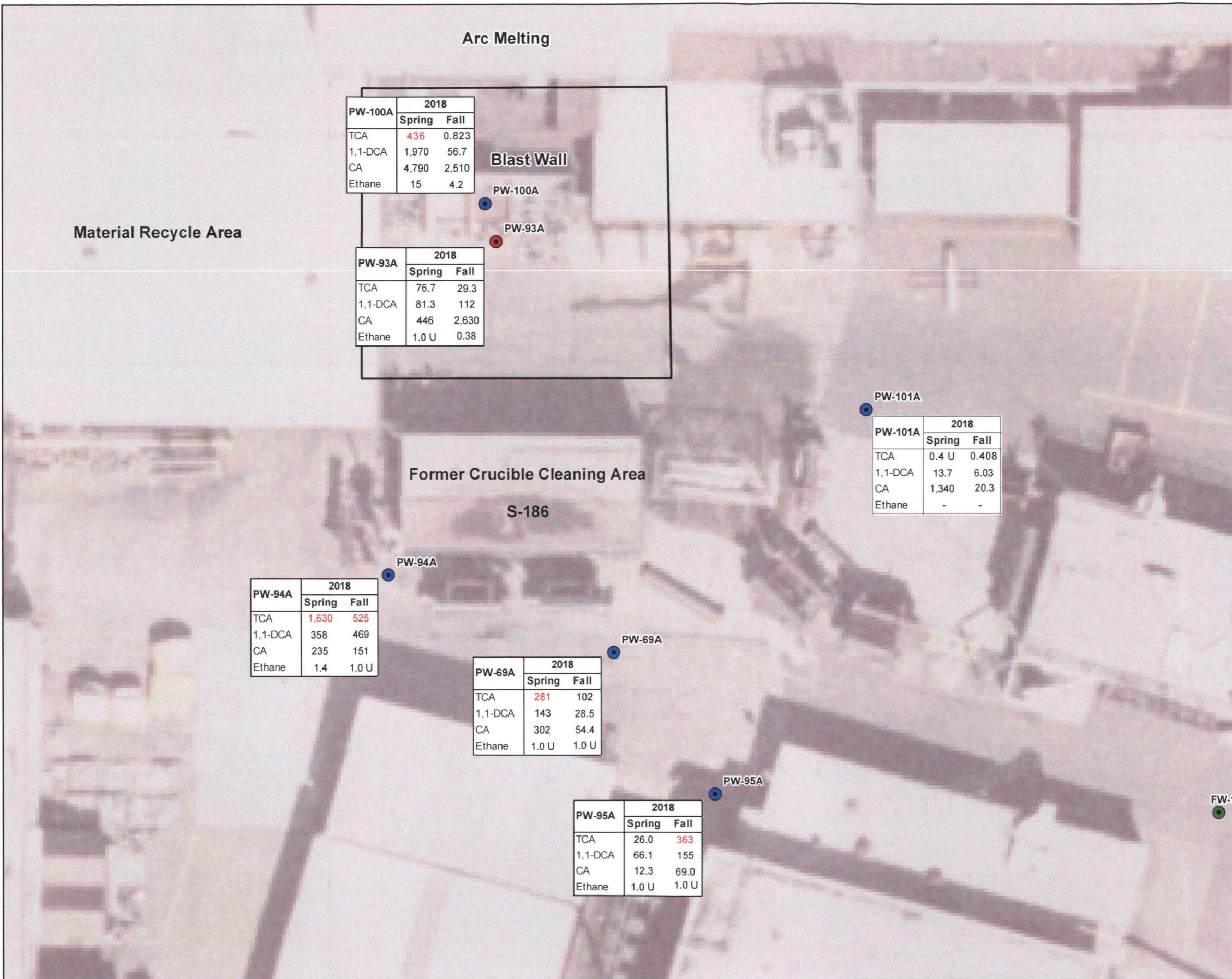
$\mu\text{g/L}$ = microgram per liter

5-year rolling plot displays all wells with any cleanup standard exceedances in the provided timeframe. For historical data, see tables in Attachment A.

In September 2009, a total of 27,600 gallons of EISB substrate was injected.

Fall 2014 sampling event was conducted in January and February 2015.

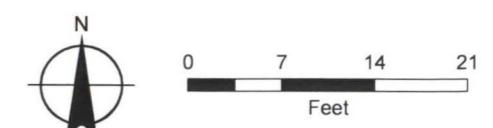
FIGURE 7E
FCCA Area
Wells Exceeding Vinyl Chloride Cleanup Standard, 2014-2018
ATI Millersburg Operations, Oregon

FIGURE 7F**FCCA 2018 Ethane Sample Results***ATI Millersburg Operations, Oregon***LEGEND**

- Perimeter Area Well
- Injection Area Well
- Source Area Well

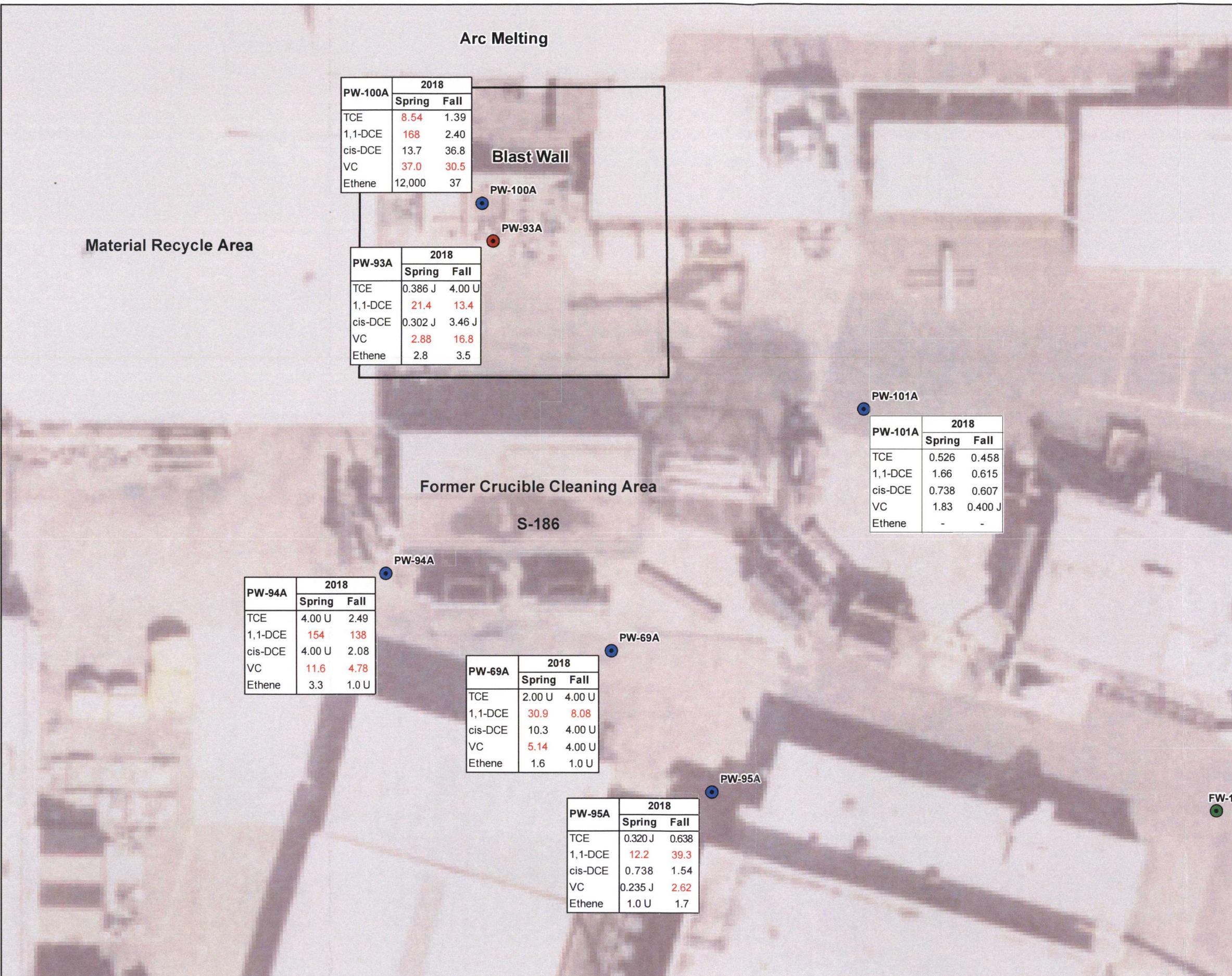
NOTES:

- PW-70AR not shown in figure, located approximately 140' to the northwest. For location, refer to Figure 1.
- Concentration values exceeding ROD standards are shown in red.
- All results shown in ug/L.
- U = Not detected above the reporting limit
- J = Estimated value below the reporting limit
- TCA = 1,1,1 - Trichloroethane
- DCA = Dichloroethane
- CA = Chloroethane
- FCCA = Former Crucible Cleaning Area

**MAP NOTES:**

Date: October 13, 2015
Data Sources: Wah Chang, City of Albany GIS

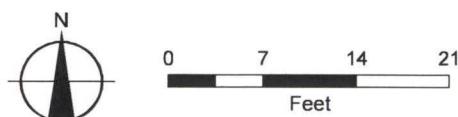


FIGURE 7G**FCCA 2018 Ethene Sample Results***ATI Millersburg Operations, Oregon***LEGEND**

- Perimeter Area Well
- Injection Area Well
- Source Area Well

NOTES:

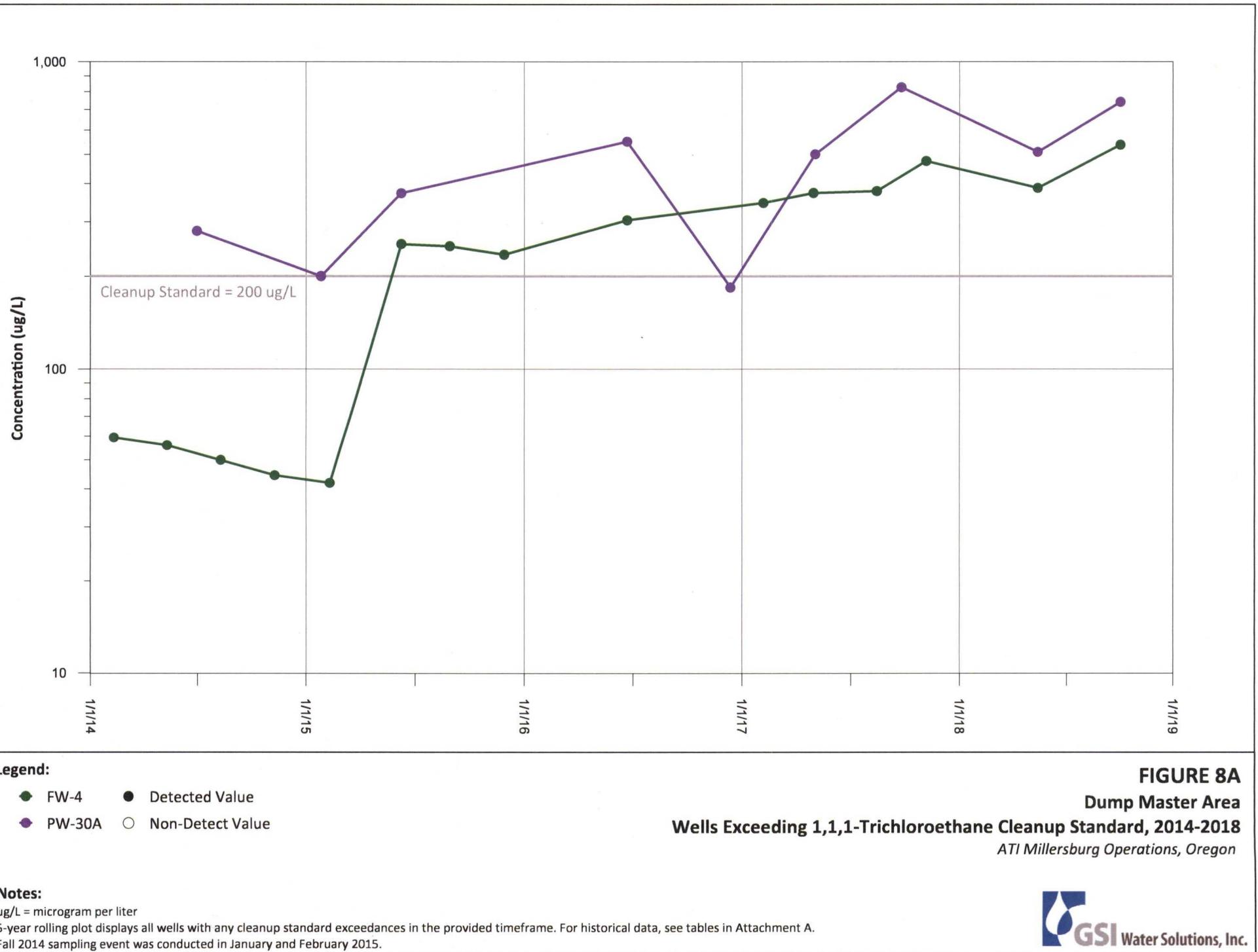
- PW-70AR not shown in figure, located approximately 140' to the northwest. For location, refer to Figure 1.
- Concentration values exceeding ROD standards are shown in red.
- All results shown in ug/L.
- U = Not detected above the reporting limit
- J = Estimated value below the reporting limit
- TCE = Trichloroethene
- DCE = Dichloroethene
- VC = Vinyl Chloride
- FCCA = Former Crucible Cleaning Area

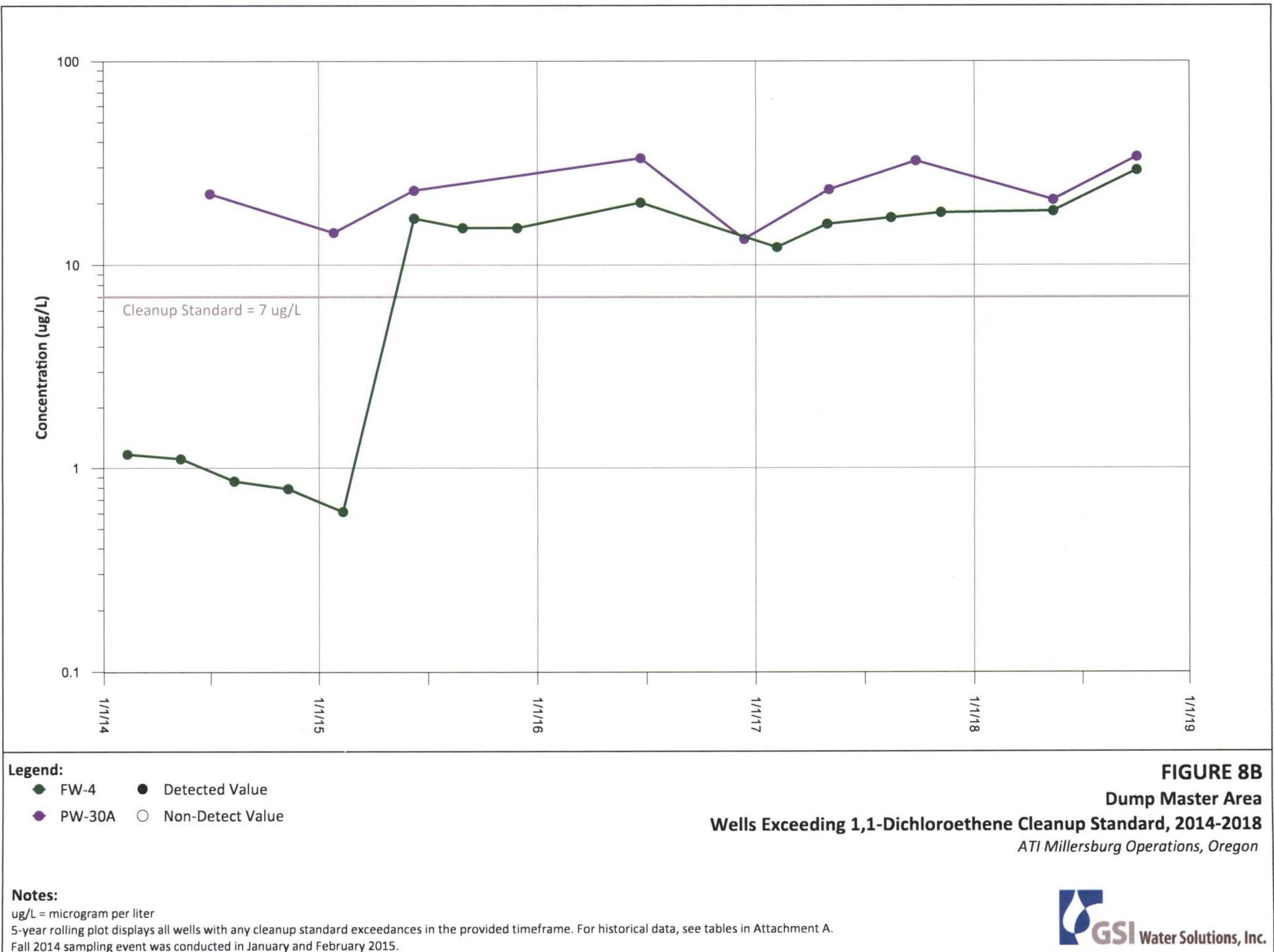
**MAP NOTES:**

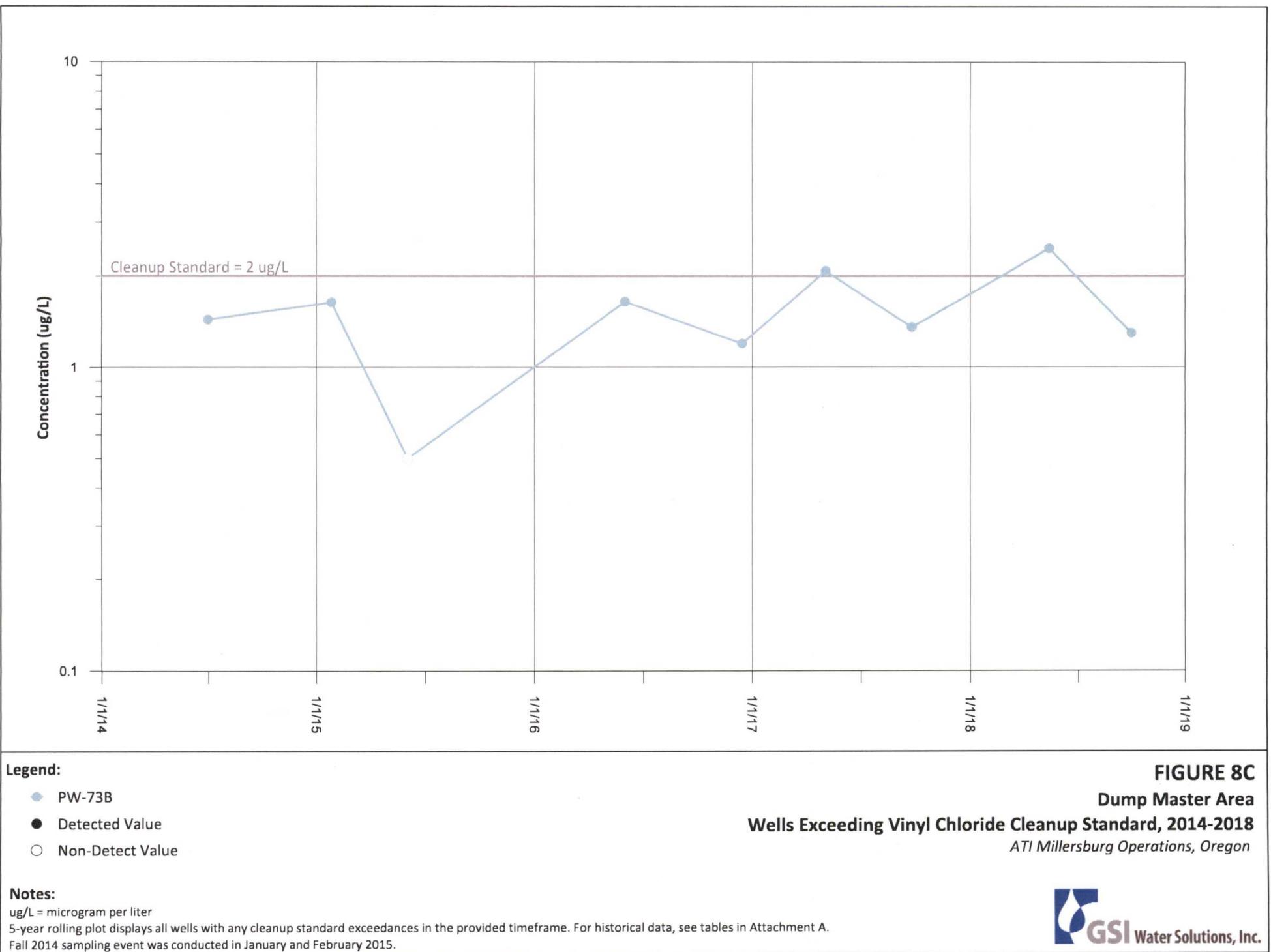
Date: October 15, 2015

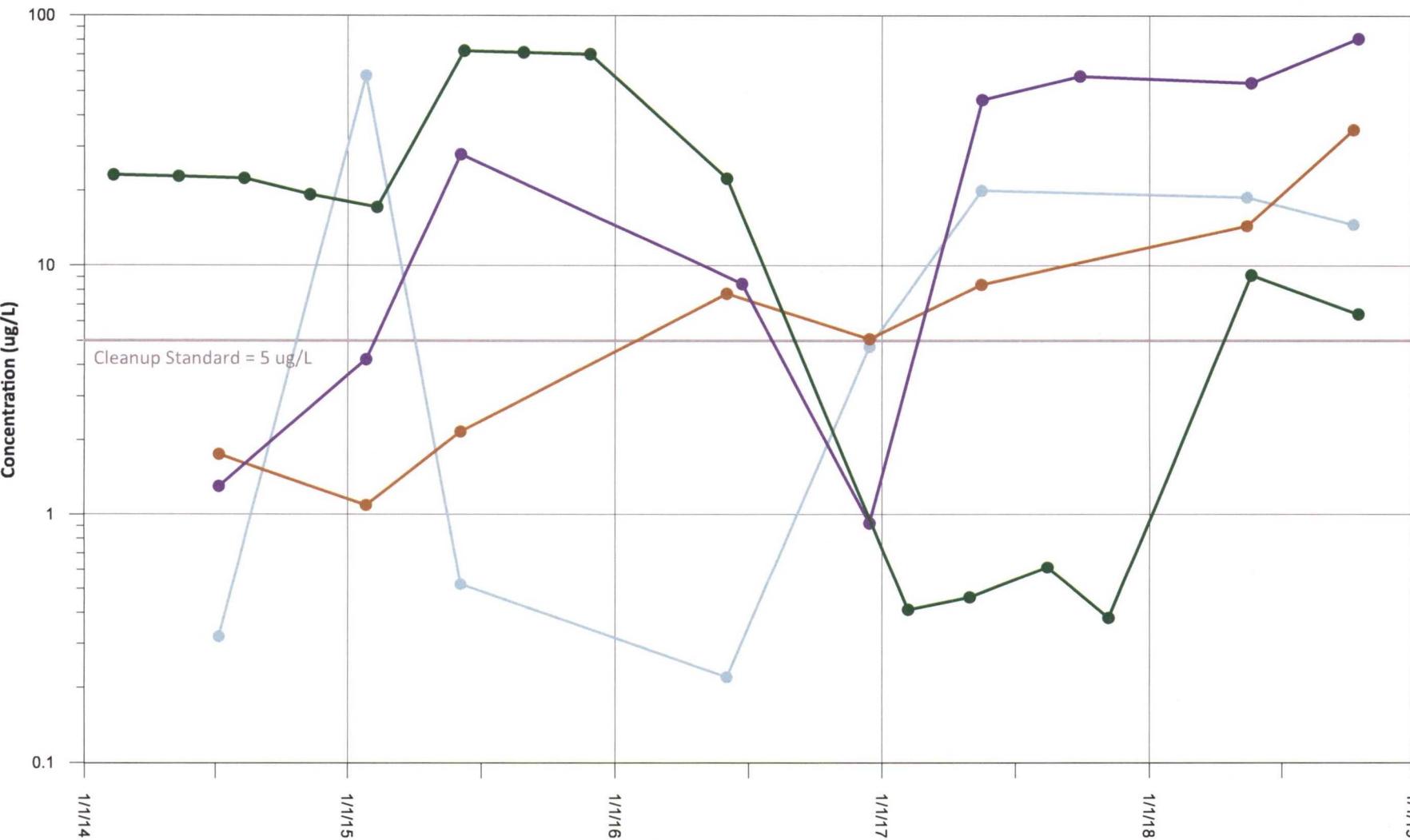
Data Sources: Wah Chang, City of Albany GIS











Legend:

- FW-2 ● PW-86A
- PW-42A ● Detected Value
- PW-85A ○ Non-Detect Value

Notes:

$\mu\text{g/L}$ = microgram per liter

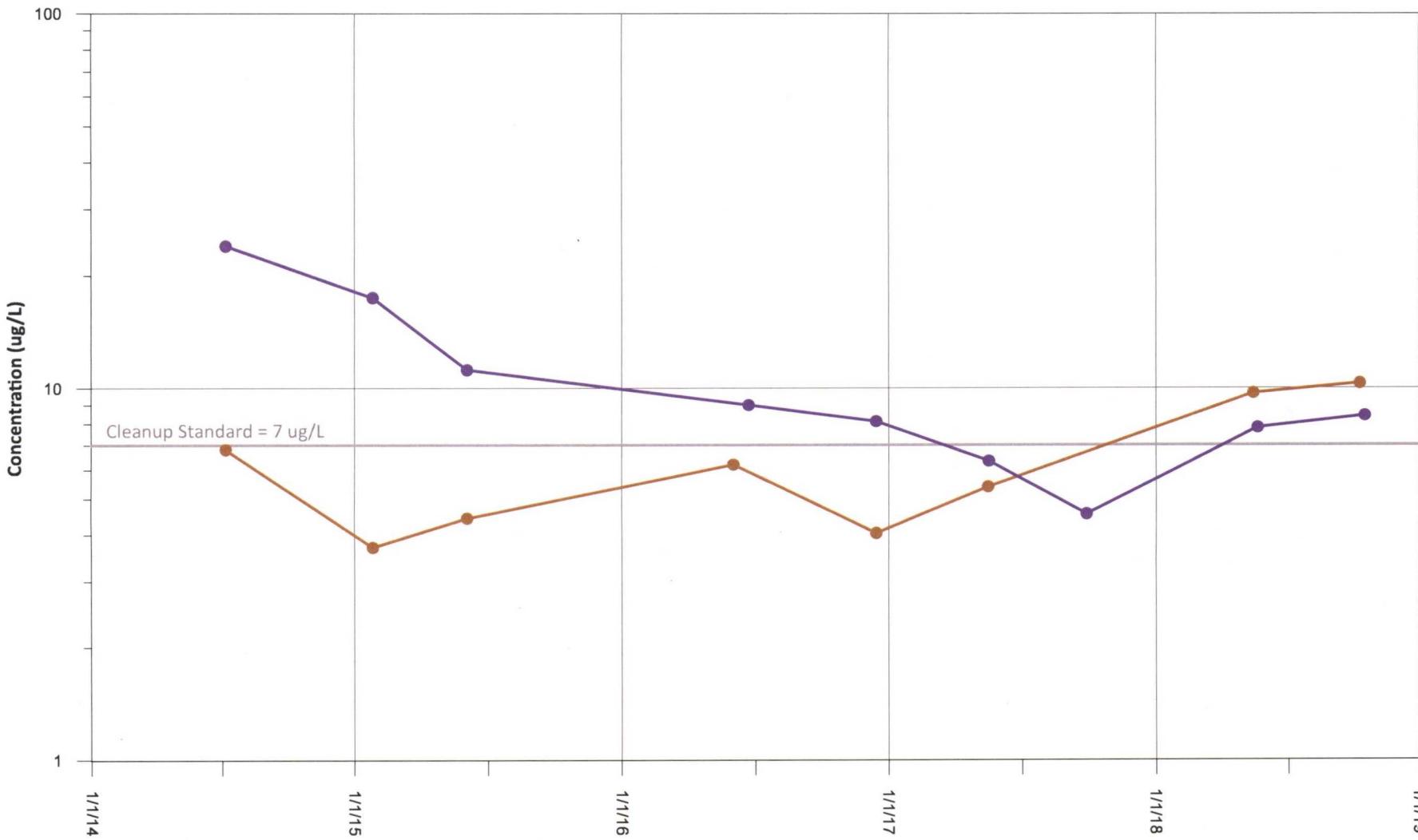
5-year rolling plot displays all wells with any cleanup standard exceedances in the provided timeframe. For historical data, see tables in Attachment A.

Fall 2014 sampling event was conducted in January and February 2015.

FIGURE 9A

Material Recycling Area
Wells Exceeding Trichloroethene Cleanup Standard, 2014-2018

ATI Millersburg Operations, Oregon



Legend:

- PW-42A ● Detected Value
- PW-85A ○ Non-Detect Value

Notes:

$\mu\text{g/L}$ = microgram per liter

5-year rolling plot displays all wells with any cleanup standard exceedances in the provided timeframe. For historical data, see tables in Attachment A.

Fall 2014 sampling event was conducted in January and February 2015.

FIGURE 9B
Material Recycling Area
Wells Exceeding 1,1-Dichloroethene Cleanup Standard, 2014-2018
ATI Millersburg Operations, Oregon

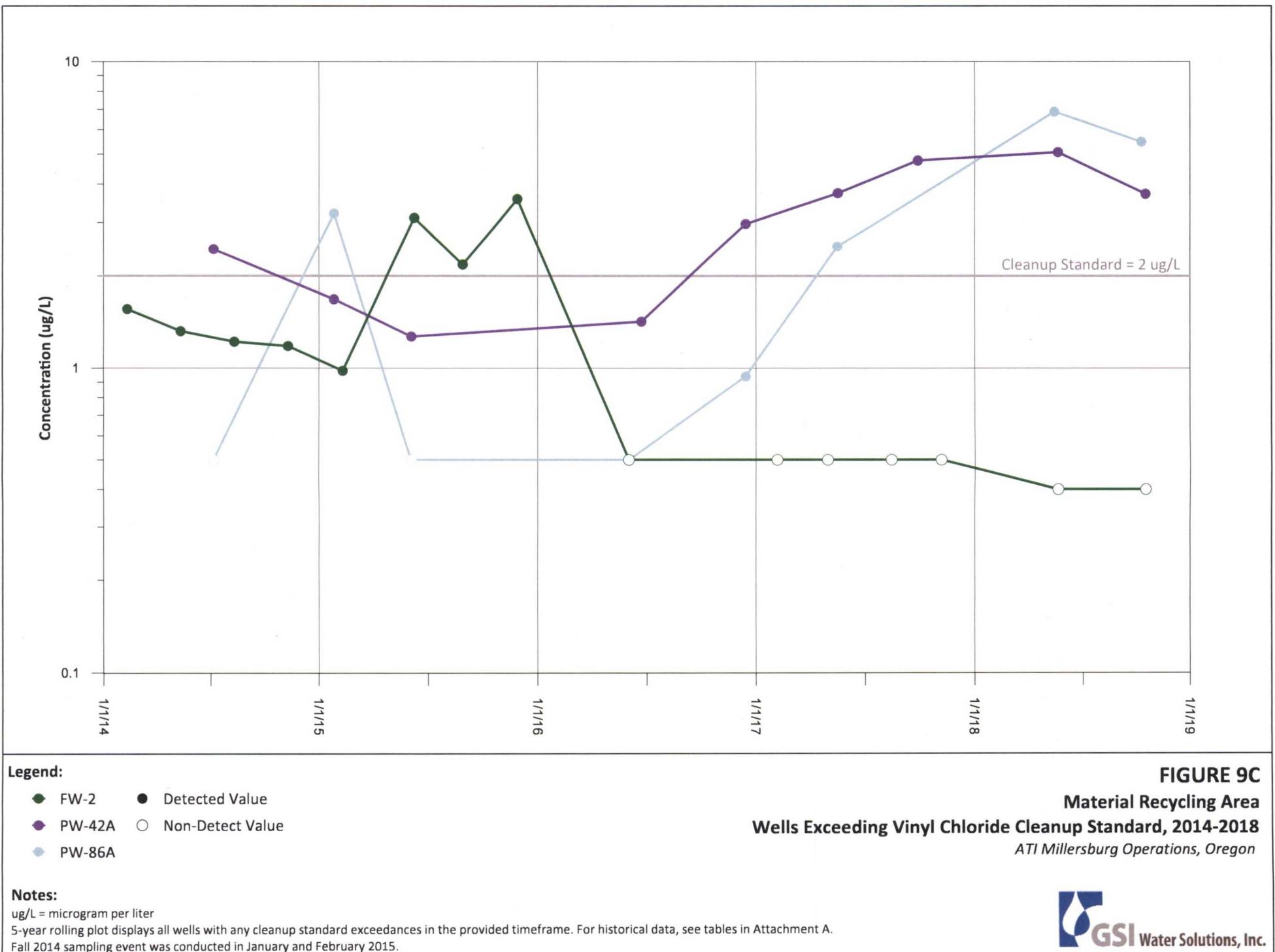
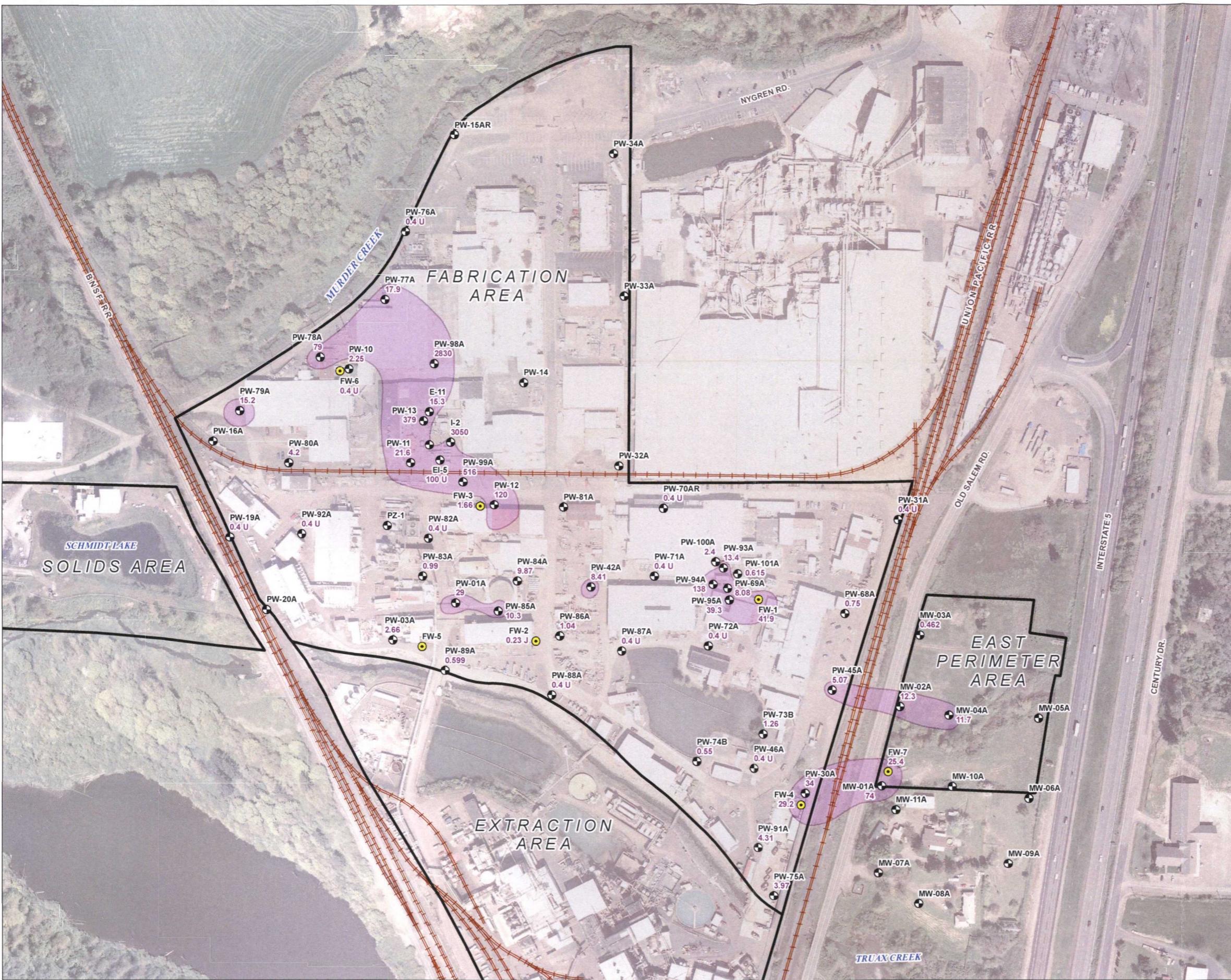


FIGURE 10

1,1-Dichloroethene Distribution
in Fabrication Area
ATI Millersburg Operations, Oregon

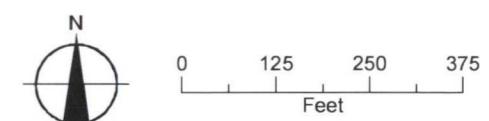


LEGEND

- Monitoring Well
DCE Concentration in $\mu\text{g/L}$
- Extraction Well
DCE Concentration in $\mu\text{g/L}$
- DCE Concentrations Above the ROD Standard (7 $\mu\text{g/L}$)
- Railroad

NOTES:

ROD = record of decision
DCE = 1,1-dichloroethene
U = not detected above reporting limit
 $\mu\text{g/L}$ = micrograms per liter
Concentration data are from fall 2018 sampling event (see Attachment A for complete analytical details).



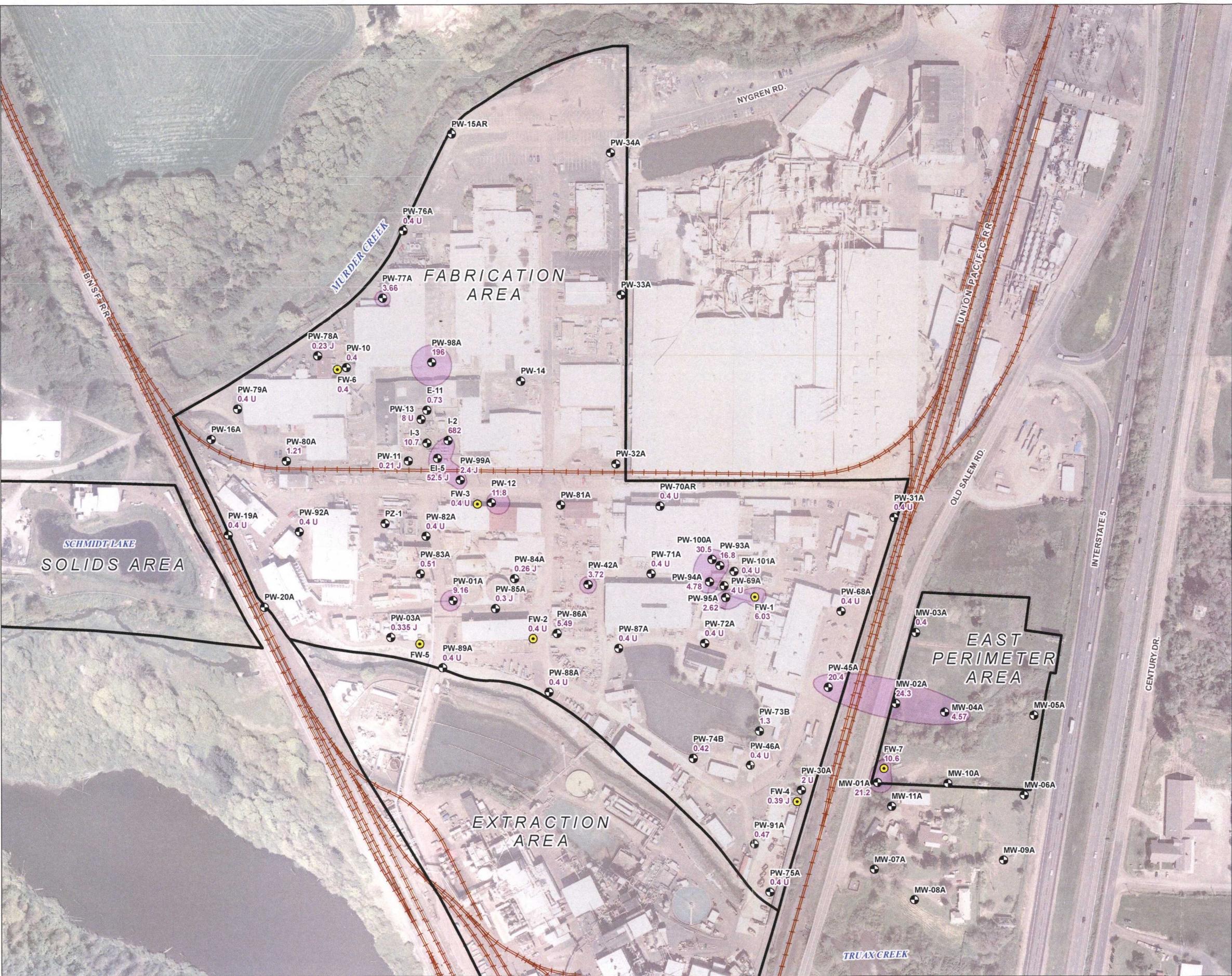


FIGURE 11

Vinyl Chloride Distribution in Fabrication Area

ATI Millersburg Operations, Oregon

LEGEND

- Monitoring Well
VC Concentration in µg/L
 - Extraction Well
VC Concentration in µg/L
 -  VC Concentrations Above the ROD Standard (2 µg/L)
 -  Railroad

NOTES:

ROD = record of decision
VC = vinyl chloride
U = not detected above reporting limit
µg/L = micrograms per liter
Concentration data are from fall 2018 sampling event
(see Attachment A for complete analytical details)



A horizontal number line representing distance in feet. The line starts at 0 and ends at 375. There are four major tick marks labeled 0, 125, 250, and 375. The space between 0 and 125 is divided into four equal segments by two unlabeled tick marks. The space between 125 and 250 is divided into three equal segments by two unlabeled tick marks. The space between 250 and 375 is divided into three equal segments by two unlabeled tick marks. Below the number line, the word "Feet" is written in a bold, italicized font.



Attachment A
*Historical Chlorinated Volatile Organic Compounds
Groundwater Quality Data*

Table A-1. Monitoring Well Concentrations for 1,1,1 Trichloroethane (TCA) in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁵	Spring 2015	Spring 2016 ⁶	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018
Hot Spot Monitoring Wells																							
Acid Sump	PW-11	µg/L	200	135	16.5	21.1	15.2	4.61	3.1	1.65	13.9	11.5	10.2	254	176	43.5	85.4	131	11.3	11	66.1	9.78	8.03
Acid Sump	PW-12	µg/L	200	8,100	2,490	1,190	823	389	364	65	1,710 E	308	251	1,160	1,170	894	1,360	527	616	166	155	640	504
Acid Sump	PW-13	µg/L	200	564	417	175	152	15.6	56	8.77	10.4	9.98	9.77	154	197	113	139	13.5	38.2	24.2	41.7	92.4	68.5
Acid Sump	PW-99A	µg/L	200	27.5 ¹	54.6	22.1	7.15	8.94	5.18	24	19.3	11.2	43.5	131	43	26.7	38.3	157	86.9	74.9	70.6	54.7	
Acid Sump	EI-5	µg/L	200																15.3 ⁷	4,040	40.2	766	90.2 J
Acid Sump	E-11	µg/L	200				0.5 U ²	0.5 U	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	0.29 J	1.6	6.28	1	0.5	0.74	0.52	3.04	9.39	7.71
Acid Sump	I-2	µg/L	200															30,000 ⁷	18,400	28,300	25,100	38,400	
Acid Sump	I-3	µg/L	200															1.46 ⁷	1,750	1.44	1,800	5.44	
Material Recycle	PW-42A	µg/L	200	3.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Material Recycle	PW-85A	µg/L	200	37.3	3.28	11.2	8.95	6.18	6.34	2.34	4.56	3.07	2.91	2.34	1.71	0.68	0.61	0.33 J	0.28 J	0.4 J		1.20	1.19
Material Recycle	PW-86A	µg/L	200	2.6	0.27 J	1.04	0.98	0.33 J	0.54	0.5 U	0.21 J	0.5 U	0.5 U	0.75	0.57	0.5 U	0.26 J	0.15 J	0.5 U	0.5 U	0.5 U	0.800 U	0.400 U
Amm Sulfate Stg	PW-01A	µg/L	200	1 U	0.12 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	31.8	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Amm Sulfate Stg	PW-03A	µg/L	200	26.6	0.17 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Amm Sulfate Stg	PW-83A	µg/L	200	10.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-45A	µg/L	200	6.3	0.11 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-68A	µg/L	200	652	2.51	0.16 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	1.16
FCCA	PW-69A	µg/L	200	3,790	386	451	368	28.8	245	13.4	43.4	127 E	111	145	9.5	103	95.4	60.5	55.4	96.2	117	281	102
FCCA	PW-71A	µg/L	200	18.3	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-100A	µg/L	200				0.99 ³	113	102	84.5	35.3	0.95	0.81	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1,060	1,080	436	0.823
FCCA	MW-01A	µg/L	200	2.4	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	MW-02A	µg/L	200	37	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	MW-03A	µg/L	200	3.7	0.5 U	0.45 J	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.275 J	0.400 U
FCCA	MW-04A	µg/L	200	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-93A	µg/L	200		13,300	9,980	11,100	1,120	5,970	845	350	19.6	16.7	11.5	10.1	28.2	28.7	18.8	26.6	46.6	29.1	76.7	29.3
FCCA	PW-94A	µg/L	200		43.5	183	39	197	12	156	129 E	153 E	146	260	1,380	1,610	1,830	2,460	2,260	1,430	1,190	1,630	525
FCCA	PW-95A	µg/L	200		1,820	205	348	90.4	234	45.2		175 E	156	132	65.2	582	259	373	149	699	153	26.0	363
Dump Master	PW-30A	µg/L	200	1,680	833	452	431	415	286	264	213 E	212 E	390	211	280	200	372	551	184	500	827	509	741
Dump Master	PW-73B	µg/L	200	1.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Non Hot Spot Monitoring Wells																							
Acid Sump	PW-10	µg/L	200	125	16.1	16.6	1.23	0.13 J	0.68	0.5 U	0.55	0.5 U	0.5 U	41.9	51.4	25.6	39.1	25.6	15.3	23.8	33.2	24.1	15.5
Acid Sump	PW-14	µg/L	200	1 U														0.5 U					
Acid Sump	PW-16A	µg/L	200	2.6	4.51	4.33	3.78	1.89	1.2	0.53	0.74	0.5 U	0.5 U	0.5 U	2.89	2.92	0.31 J	0.4 J	0.91	0.27 J	0.18 J	0.400 U	
Acid Sump	PW-19A	µg/L	200	1 U	0.5 U	1.64	0.5 U	0.5 U	0.5 U	0.5 U</td													

Table A-1. Monitoring Well Concentrations for 1,1,1 Trichloroethane (TCA) in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁵	Spring 2015	Spring 2016 ⁶	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018
Acid Sump	PW-98A	µg/L	200		504 ¹	406	507	183	123	128	6.53	37.8	24.2	1.12	26.5	73.2	407	1,000	548	1,270	1,340	894	2,600
Acid Sump	FW-6	µg/L	200				8.17 ⁴	3.18	6.25	1.11	0.2 U	0.98	0.49 J	0.5 U	1.61	2.15	39	0.74	2.01	0.5 U	1.49	0.995	0.400 U
Material Recycle	PW-87A	µg/L	200	1.018	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Material Recycle	PW-88A	µg/L	200	2.6	0.19 J	0.17 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.15 J	0.400 U	0.400 U
Amm Sulfate Stg	PW-20A	µg/L	200	1 U														0.5 U					
Amm Sulfate Stg	PW-84A	µg/L	200	18.2	0.26 J	6.43	5.25	2.33	2.81	1.42	1.48	2.37	1.95	1.26	0.48 J	0.48 J	0.44 J	0.38 J	0.33 J	0.27 J	0.51	0.920	1.09
Amm Sulfate Stg	PW-89A	µg/L	200	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.15 J	0.17 J	0.400 U	0.400 U
Amm Sulfate Stg	PW-92A	µg/L	200	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-31A	µg/L	200	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-70AR	µg/L	200	1 U				0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-72A	µg/L	200	2.4													0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-101A	µg/L	200				0.08 J ³	8.93	6.78	5.67	0.3 J	0.5 U	0.5 U	1.25	0.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.408
Dump Master	PW-46A	µg/L	200	1 U	0.18 J	0.15 J	0.5 U	0.5 U	0.5 U	0.5 U	0.46 J	0.5 U	0.35 J	0.5 U	0.2 J	0.52	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Dump Master	PW-74B	µg/L	200	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Dump Master	PW-75A	µg/L	200	311	64.2	42.6	39.6	27.5	21.3	11.6	13.1	15.9	8.24	12.5	7.26	20.8	10.2	21.7	28.6	62.6	18	65.3	28.9
Dump Master	PW-91A	µg/L	200	391	8.57	2.74	1.79	1.31	0.54	0.64	16.4 0	0.39 J	10	6.8	3.38	3.59	8.73	6.49	0.55	8.45	11.4	15.2	5.63
Perimeter Monitoring Wells																							
Acid Sump	PW-15AR	µg/L	200	39														0.38 J					
Acid Sump	PW-76A	µg/L	200	14.8	1.14	1.77	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.1	2.02	0.16 J	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Acid Sump	PW-77A	µg/L	200	50 U	3.57	4.97	2.15	1.08	1.26	0.53	0.33 J	0.49 J	0.35 J	0.55	5.25	2.05	0.32 J	0.25 J	0.19 J	1.6	0.5 U	0.400 U	0.400 U
Acid Sump	PW-78A	µg/L	200	22.8	1.79	10.5	9.55	2.18	4.38	0.67	0.5 U	0.5 U	0.5 U	7.37	17.2	12.5	8.55	8	6.19	10.2	9.69	16.7	10.4
Acid Sump	PW-79A	µg/L	200	28.9	0.08 J	8.63	4.19	1.33	4.34	0.69	2.81	0.44 J	0.32 J	2.3	3.07	2.52	0.21 J	0.35 J	0.5 U	13.9	3.73	16.6	19.1

Notes:

¹ Initial samples were collected in July 2009 for PW-98A and PW-99A.

² Initial samples were collected in May 2010 for E-11.

³ Initial samples were collected in August 2010 for PW-100A and PW-101A.

⁴ Initial samples were collected in April 2010 for FW-6.

⁵ The fall 2014 sampling event was conducted in February 2015.

⁶ The spring 2016 event was a sitewide groundwater and surface water sampling event.

⁷ Initial samples were collected in fall 2016 for El-5, I-2, and I-5.

µg/L = microgram per liter

FCCA = former crucible cleaning area

Amm Sulfate Stg = ammonium sulfate storage

J = estimated value

D = dilution

U = not detected above reporting limit

E = estimated value above the calibration range

Blank cells indicate no analysis performed.

10-year rolling table. Refer to past annual reports for a full records of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

Table A-2. Monitoring Well Concentrations for 1,1 Dichloroethene (DCE) in 2009-2018

ATI Millersburg Operations, Oregon

Table A-2. Monitoring Well Concentrations for 1,1 Dichloroethene (DCE) in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁵	Spring 2015	Spring 2016 ⁶	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	
Acid Sump	PW-98A	µg/L	7		1,080 ¹	1,070	495	427	125	245	31.8	134 E	126	28.3	110	203	651	1,110	588	1,390	1,340	1,120	2,830	
Acid Sump	FW-6	µg/L	7				4.82 ⁴	0.5 U	0.18 J	0.5 U	0.2 U	0.5 U	3.38	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U					
Material Recycle	PW-87A	µg/L	7	1.4	0.49 J	0.52	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.24 J	0.5 U	0.5 U	0.400 U	0.400 U
Material Recycle	PW-88A	µg/L	7	1 U	0.5 U	0.14 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Amm Sulfate Stg	PW-20A	µg/L	7	1 U															0.5 U					
Amm Sulfate Stg	PW-84A	µg/L	7	22.9	5.19	4.23	3.98	2.56	2.58	0.54	1.46	8.24	8.82	7.01	7.62	5.9	6.45	5.78	3.84	5.43	6.29	8.61	9.87	
Amm Sulfate Stg	PW-89A	µg/L	7	3.5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.47 J	0.48 J	0.410	0.599		
Amm Sulfate Stg	PW-92A	µg/L	7	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-31A	µg/L	7	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-70AR	µg/L	7	1 U				0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-72A	µg/L	7	2.2													0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-101A	µg/L	7				0.16 ³	286	183	64.8	0.33 J	0.5 U	0.5 U	0.55	0.35 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.17 J	0.16 J	0.615	
Dump Master	PW-46A	µg/L	7	9.2	7.22	7.47	6.94	5.69	3.14	3.48	5.71	2.14	4.33	0.5 U	2.16	0.5 U	0.5 U	0.5 U	0.5 U	0.91	1.3	0.5 U	0.509	0.400 U
Dump Master	PW-74B	µg/L	7	5.1	0.5 U	2.22	1.82	1.25	0.76	0.63	2.84	0.51	2.22	1.12	0.82	1.66	1	1.02	0.53	0.99	0.71	0.866	0.550	
Dump Master	PW-75A	µg/L	7	51.4	7.08	6.36	5.78	5.18	3.16	3.67	2.9	2.63	2.34	2.88	1.72	2.11	1.61	1.99	3.35	3.53	1.89	4.19	3.97	
Dump Master	PW-91A	µg/L	7	70.6	2.54	1.15	0.88	0.69	0.76	0.33 J	3.28	0.5 U	2.5	2.63	1.74	1.02	1.78	1.97	1.01	1.46	3.32	3.44	4.31	
Perimeter Monitoring Wells																								
Acid Sump	PW-15AR	µg/L	7	5 U														0.2 J						
Acid Sump	PW-76A	µg/L	7	6.9	0.18 J	0.2 J	0.54	0.5 U	0.26 J	0.5 U	0.5 U	0.5 U	0.22 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Acid Sump	PW-77A	µg/L	7	90.7	30.8	34.4	33.8	26.5	26.4	18.4	16.3	14.8	12.4	18.8	16.3	15.4	18.3	16	9.38	15.7	10	17.7	17.9	
Acid Sump	PW-78A	µg/L	7	67	71.3	83.8	68.7	57.6	42.3	46.2	38.2	34.2	31.3	74.7	69	77.3	84.1	66.3	77.2	84	83.5	82.9	79.0	
Acid Sump	PW-79A	µg/L	7	16.6	2.05	5.47	3.09	2.64	1.56	0.76	0.72	0.61	0.59	5.42	3.66	0.5 U	1.14	2.54	0.5 U	10.5	9.79	12.9	15.2	

Notes:

¹ Initial samples were collected in July 2009 for PW-98A and PW-99A.

² Initial samples were collected in May 2010 for E-11.

³ Initial samples were collected in August 2010 for PW-100A and PW-101A.

⁴ Initial samples were collected in April 2010 for FW-6.

⁵ The fall 2014 sampling event was conducted in February 2015.

⁶ The spring 2016 event was a sitewide groundwater and surface water sampling event.

⁷ Initial samples were collected in fall 2016 for I-5, I-2, and I-5.

µg/L = microgram per liter

FCCA = former crucible cleaning area

Amm Sulfate Stg = ammonium sulfate storage

J = estimated value

D = dilution

U = not detected above reporting limit

E = estimated value above the calibration range

Blank cells indicate no analysis performed.

10-year rolling table. Refer to past annual reports for a full records of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

Table A-3. Monitoring Well Concentrations for Trichloroethene (TCE) in 2009-2018

ATI Millersburg Operations, Oregon

Table A-3. Monitoring Well Concentrations for Trichloroethene (TCE) in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁵	Spring 2015	Spring 2016 ⁶	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018		
Acid Sump	PW-98A	µg/L	5		336 ¹	150	108	26.3	46.1	18.4	0.2 U	1	0.78	8.1	5 U	5 U	52.1	59.9	27.3	41.1	38.7	32.1	44.6		
Acid Sump	FW-6	µg/L	5				0.5 U ⁴	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.99	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U		
Material Recycle	PW-87A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U		
Material Recycle	PW-88A	µg/L	5	1 U	0.5 U	0.39 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.29 J	0.46 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.42 J	2.56	1.89	0.760	
Amm Sulfate Stg	PW-20A	µg/L	5	1 U															0.5 U						
Amm Sulfate Stg	PW-84A	µg/L	5	1.2	10.4	3.93	3.34	1.69	1.48	0.67	1.11	5.89	6.35	5.68	8.38	2.96	6.51	4.81	3.64	7.19	24.7	31.6	46.5		
Amm Sulfate Stg	PW-89A	µg/L	5	20.3	0.9	0.86	0.77	0.62	0.26 J	0.5 U	0.5 U	0.88	1.07	1.57	1.29	0.78	0.34 J	1.64	9.22	10.4	5.71	9.00			
Amm Sulfate Stg	PW-92A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-31A	µg/L	5	1 U	0.1 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-70AR	µg/L	5	1 U				0.17 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U					0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-72A	µg/L	5	1 U													0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-101A	µg/L	5			0.12 J ³	4.02	3.89	1.84	0.32 J	0.61	0.59	0.5 U	0.17 J	0.5 U	0.44 J	0.28 J	0.71	0.74	0.43 J	0.526	0.458			
Dump Master	PW-46A	µg/L	5	5.2	4.18	3.68	3.33	2.11	1.86	1.89	2.96	1.34	2.4	0.5 U	1.19	0.5 U	0.5 U	0.5 U	0.62	0.88	0.5 U	0.339 J	0.400 U		
Dump Master	PW-74B	µg/L	5	3.7	0.5 U	0.82	0.67	0.5 U	0.33 J	0.5 U	1.26	0.5 U	1.03	0.56	0.36 J	0.81	0.5	0.53	0.29 J	0.52	0.39 J	0.410	0.350 J		
Dump Master	PW-75A	µg/L	5	6.3	0.49 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.17 J	0.2 J	0.5 U	0.400 U	0.400 U			
Dump Master	PW-91A	µg/L	5	4.3	0.33 J	0.2 J	0.5 U	0.5 U	0.5 U	0.39 J	0.5 U	0.25 J	0.5 U	0.27 J	0.65	0.21 J	0.27 J	0.96	0.34 J	0.15 J	0.207 J	0.400 U			
Perimeter Monitoring Wells																									
Acid Sump	PW-15AR	µg/L	5	5 U														0.5 U							
Acid Sump	PW-76A	µg/L	5	1 U	0.16 J	0.42 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.35 J	0.35 J	0.27 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U		
Acid Sump	PW-77A	µg/L	5	50 U	3.09	2.44	1.98	1.72	1.45	0.69	0.31 J	0.24 J	0.18 J	1.98	1.91	1.96	1.84	1.83	1.12	1.73	1.03	1.42	1.37		
Acid Sump	PW-78A	µg/L	5	2 U	2.05	1.73	1.94	0.75	0.63	0.55	0.5 U	0.21 J	0.5 U	1.96	2.00	2.33	2.29	1.96	2.27	2.46	2.15	2.10	2.12		
Acid Sump	PW-79A	µg/L	5	1.4	0.5 U	0.58	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.21	0.91	0.5 U	0.19 J	0.44 J	0.5 U	1.11	2.33	1.84	1.88			

Notes:

¹ Initial samples were collected in July 2009 for PW-98A and PW-99A.

² Initial samples were collected in May 2010 for E-11.

³ Initial samples were collected in August 2010 for PW-100A and PW-101A.

⁴ Initial samples were collected in April 2010 for FW-6.

⁵ The fall 2014 sampling event was conducted in February 2015.

⁶ The spring 2016 event was a sitewide groundwater and surface water sampling event.

⁷ Initial samples were collected in fall 2016 for I-5, I-2, and I-5.

µg/L = microgram per liter

FCCA = former crucible cleaning area

Amm Sulfate Stg = ammonium sulfate storage

J = estimated value

D = dilution

U = not detected above reporting limit

E = estimated value above the calibration range

Blank cells indicate no analysis performed.

10-year rolling table. Refer to past annual reports for a full records of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

Table A-4. Monitoring Well Concentrations for Tetrachloroethene (PCE) in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁵	Spring 2015	Spring 2016 ⁶	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	
Hot Spot Monitoring Wells																								
Acid Sump	PW-11	µg/L	5	3.3	0.96	0.33 J	0.5 U	0.5 U	0.5 U	0.5 U	0.98	0.77	0.67	5.55	5 U	1.32	0.94	0.88	0.55	0.66	1.97	0.392 J	0.430	
Acid Sump	PW-12	µg/L	5	34.2	9.21	3.94	2.5 U	2.5 U	2.5 U	2.5 U	7.27	4.35	3.33	7.05	25 U	25 U	6.67	4.22	3.83	1.4	1.08	2.66	2.60 J	
Acid Sump	PW-13	µg/L	5	2.8	3.5 J	1.35 J	2.1 J	2.5 U	2.5 U	2.5 U	0.33 J	0.5 U	0.5 U	1.87 J	25 U	25 U	3.16 J	0.54	1.1	0.91	1.21	20.0 U	8.00 U	
Acid Sump	PW-99A	µg/L	5		0.21 J ¹	0.37 J	0.5 U	0.5 U	0.5 U	0.5 U	3.68	3.55	2.78	0.31 J	1.83 J	5 U	0.18 J	0.26 J	1.05	0.54	1.97	0.786	4.00 U	
Acid Sump	EI-5	µg/L	5																5 U ⁷	6.02 J	10 U	4.00 U	100 U	
Acid Sump	E-11	µg/L	5				0.5 U ²	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Acid Sump	I-2	µg/L	5																50 U ⁷	10.6 J	26.5 J	20.5	29.0	
Acid Sump	I-3	µg/L	5																0.5 U ⁷	6.69	0.5 U	2.50 J	0.400 U	
Material Recycle	PW-42A	µg/L	5	2.5	0.08 J	0.41 J	0.5 U	0.5 U	0.5 U	0.5 U	0.59	0.5 U	2.56	0.5 U	0.5 U	0.25 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.02	1.86
Material Recycle	PW-85A	µg/L	5	1 U	0.18 J	0.26 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.68	0.81	0.72	0.65	0.33 J	0.46 J	0.35 J	0.24 J	0.43 J		0.341 J	0.760	
Material Recycle	PW-86A	µg/L	5	2.8	3.21	0.41 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.46	0.5 U	0.5 U	0.17 J	0.55		0.582 J	0.469	
Amm Sulfate Stg	PW-01A	µg/L	5	1 U	0.5 U	0.33 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.41 J	0.35 J	0.400 U	0.400 U	
Amm Sulfate Stg	PW-03A	µg/L	5	1.1	0.1 J	0.1 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Amm Sulfate Stg	PW-83A	µg/L	5	1 U	0.5 U	0.09 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-45A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-68A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-69A	µg/L	5	8.6	15.5	10.5	8.21	6.69	7.12	4.26	5.71	8.55	7.68	5.06	0.48 J	4 J	3.61	2.13	2.77	7.47	6.48	10.8	2.07 J	
FCCA	PW-71A	µg/L	5	2.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-100A	µg/L	5				7.23 ³	2.99	2.46	1.45	4.14	0.49 J	0.41 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	6.77	9.4	10.1	0.982
FCCA	MW-01A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	MW-02A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	MW-03A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	MW-04A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-93A	µg/L	5		40	79	31.5	5.26 J	14.3	1.18 J	19	3.92	3.12	0.98	5 U	0.32 J	0.35 J	0.22 J	0.44 J	2.18	0.63	0.702	2.49 J	
FCCA	PW-94A	µg/L	5			0.12 J	0.19 J	0.5 U	0.1 J	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	1.16	25 U	25 U	1.31 J	5.7	1.66 J	2.29 J	2.2 J	4.00 U	2.24
FCCA	PW-95A	µg/L	5			4.28	1.72	1.51	1.12	0.65	0.78		1.67	1.25	1.22	3.27	25 U	0.68	1.06	0.65	2.11	0.84	0.257 J	0.639
Dump Master	PW-30A	µg/L	5	1.3	0.68 J	0.32 J	1.1 U	1.1 U	1.1 U	1.1 U	0.22 J	0.22 J	0.4 J	0.5 U	5 U	5 U	0.31 J	0.33 J	0.16 J	0.37 J	0.75	2.00 U	2.00 U	
Dump Master	PW-73B	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Non Hot Spot Monitoring Wells																								
Acid Sump	PW-10	µg/L	5	2.1	0.52	0.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.79	1.91	0.79	1.75	1.2	0.74	1.16	1.2	1.14	1.06		
Acid Sump	PW-14	µg/L	5	1 U															0.5 U					
Acid Sump	PW-16A	µg/L	5	1 U	0.29 J	0.21 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U		
Acid Sump	PW-19A	µg/L	5	1 U	0.09 J																			

Table A-4. Monitoring Well Concentrations for Tetrachloroethene (PCE) in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁵	Spring 2015	Spring 2016 ⁶	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	
Acid Sump	PW-98A	µg/L	5		16.3¹	8.46	6.84	3.59	3.11	1.57	0.2 U	0.25 J	0.5 U	0.8	5 U	5 U	2.66	4.51	2.08	5.82	7.37	4.70	14.2	
Acid Sump	FW-6	µg/L	5				0.44 J ⁴	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.68	0.5 U	0.21 J	0.5 U	0.16 J	0.400 U	0.400 U	
Material Recycle	PW-87A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Material Recycle	PW-88A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Amm Sulfate Stg	PW-20A	µg/L	5	1 U															0.5 U					
Amm Sulfate Stg	PW-84A	µg/L	5	1 U	0.1 J	0.31 J	0.11 J	0.5 U	0.5 U	0.5 U	0.5 U	0.69	0.72	0.49 J	0.29 J	0.4 J	0.32 J	0.27 J	0.5 U	0.26 J	0.54	0.537	0.890	
Amm Sulfate Stg	PW-89A	µg/L	5	1.1	0.31 J	0.16 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.23 J	0.5 U	0.23 J	0.2 J	0.16 J	0.2 J	0.19 J	0.4 J	0.48 J	0.380 J	0.749	
Amm Sulfate Stg	PW-92A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-31A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-70AR	µg/L	5	1 U				0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U					0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-72A	µg/L	5	1 U													0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-101A	µg/L	5				0.5 U ³	5.28	3.89	4.18	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Dump Master	PW-46A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Dump Master	PW-74B	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Dump Master	PW-75A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Dump Master	PW-91A	µg/L	5	1 U	0.08 J	0.4 J	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.54	0.5 U	0.5 U	1.36	0.15 J	0.5 U	0.400 U	0.400 U	
Perimeter Monitoring Wells																								
Acid Sump	PW-15AR	µg/L	5	5 U														0.5 U						
Acid Sump	PW-76A	µg/L	5	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Acid Sump	PW-77A	µg/L	5	50 U	0.47 J	0.42 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.27 J	0.26 J	0.23 J	0.19 J	0.21 J	0.5 U	0.2 J	0.5 U	0.400 U	0.400 U	
Acid Sump	PW-78A	µg/L	5	2 U	0.68	0.6	0.72	0.5 U	0.44 J	0.5 U	0.5 U	0.5 U	0.5 U	0.65	0.52	0.75	0.75	0.61	0.8	0.8	0.7	0.825	0.720	
Acid Sump	PW-79A	µg/L	5	1 U	0.5 U	0.15 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.22 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.34 J	0.58	0.798	0.680

Notes:

¹ Initial samples were collected in July 2009 for PW-98A and PW-99A.

² Initial samples were collected in May 2010 for E-11.

³ Initial samples were collected in August 2010 for PW-100A and PW-101A.

⁴ Initial samples were collected in April 2010 for FW-6.

⁵ The fall 2014 sampling event was conducted in February 2015.

⁶ The spring 2016 event was a sitewide groundwater and surface water sampling event.

⁷ Initial samples were collected in fall 2016 for EI-5, I-2, and I-5.

µg/L = microgram per liter

FCCA = former crucible cleaning area

Amm Sulfate Stg = ammonium sulfate storage

J = estimated value

D = dilution

U = not detected above reporting limit

E = estimated value above the calibration range

Blank cells indicate no analysis performed.

10-year rolling table. Refer to past annual reports for a full records of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

**Table A-5. Monitoring Well Concentrations for Vinyl Chloride (VC) in 2009-2018
ATI Millersburg Operations, Oregon**

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁵	Spring 2015	Spring 2016 ⁶	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	
Hot Spot Monitoring Wells																								
Acid Sump	PW-11	µg/L	2	1.2	0.43 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	4.75	4.61	4.19	19.4	2.54 J	0.5 U	1.66	3.93	0.5 U	0.34 J	0.48 J	0.400 U	0.210 J	
Acid Sump	PW-12	µg/L	2	29.3	15.1	12	10.1	8.1	4.3	6.3	25.7	390	377	21.5	25.4	24.3 J	36.1	22.6	15.3	3.79	3.52	14.6	11.8	
Acid Sump	PW-13	µg/L	2	11.1	4.62 J	2.73	2.43 J	2.13 J	2.5 U	1.11 J	2.23	2.15	1.98	0.5 U	25 U	25 U	5 U	1.53	0.59	0.93	1.06 J	20.0 U	8.00 U	
Acid Sump	PW-99A	µg/L	2		0.32 J ¹	1.53	4.23	5.33	2.48	2.84	12.3	11.1	9.82	0.45 J	5.63	10.9	0.42 J	0.72	1.78	2.11	2.93	2.02	2.40 J	
Acid Sump	EI-5	µg/L	2																	8.02 ⁷	106	127	93.5	52.5 J
Acid Sump	E-11	µg/L	2				0.5 U ²	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.46 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.530	0.730
Acid Sump	I-2	µg/L	2																	226 ⁷	334	474	543	682
Acid Sump	I-3	µg/L	2																0.5 U ⁷	200	0.99	173	10.7	
Material Recycle	PW-42A	µg/L	2	4.9	5.14	2.99	2.59	2.11	2.11	0.84	1.13	2.43	5.23	0.69	2.45	1.68	1.27	1.42	2.97	3.74	4.77	5.08	3.72	
Material Recycle	PW-85A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.300 J	
Material Recycle	PW-86A	µg/L	2	45.8	7.62	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.21	0.5 U	0.5 U	0.94	2.5	6.88	5.49	
Amm Sulfate Stg	PW-01A	µg/L	2	28.4	23.4	0.77	0.61	0.51	0.43 J	0.42 J	0.5 U	10.9	13.3	10.4	8.51	8.21	6	5.85	5.21	0.66	0.5 U	6.95	9.16	
Amm Sulfate Stg	PW-03A	µg/L	2	4.2	0.5 U	0.17 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.390 J	0.335 J
Amm Sulfate Stg	PW-83A	µg/L	2	4.7	1.65	0.82	0.67	0.43 J	0.33 J	0.11 J	0.5 U	2.34	0.88	0.83	1.14	0.77	0.43 J	0.53	0.5 U	0.26 J	0.46 J	0.430	0.510	
FCCA	PW-45A	µg/L	2	29	0.33 J	0.15 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.62	0.5 U	0.9	10	0.5 U	0.79	9.74	4.02	20.4
FCCA	PW-68A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-69A	µg/L	2	3.7	3.18 J	4.76 J	4.8 J	1.06	3.8 J	0.43 J	2 U	2.06	1.88	3.19	0.28 J	1.77 J	1.42	1.03	1	1.75	2.26	5.14	4.00 U	
FCCA	PW-71A	µg/L	2	3.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-100A	µg/L	2				5.18 ³	19.9	16.8	7.64	6.44	1.05	1.04	2.03	4.12	0.97	0.67	14.2	4.43	14	21.2	37.0	30.5	
FCCA	MW-01A	µg/L	2	36.3	0.5 U	0.9	0.99	0.82	0.62	0.61	2.89	1.47	1.36	13.4	10.5	5.3	13.6	8.6	7.78	5.94	9.28	12.2	21.2	
FCCA	MW-02A	µg/L	2	166	68.2	109	52.7	36.5	42.1	16.4	49.2	21.4	19.6	53.6	46.8	0.5 U	47.5	42.3	17.7	21.5	28.8	35.8	24.3	
FCCA	MW-03A	µg/L	2	1.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	25.8	0.5 U	0.5 U	0.5 U	0.5 U	0.45 J	0.400 U	0.400	
FCCA	MW-04A	µg/L	2	29.3	9.23	10.2	8.51	7.93	6.21	5.41	5.06	30.1	26.5	9.68	7.57	8.71	8.6	3.26 J	3.49	5.52	3.8	1.69	4.57	
FCCA	PW-93A	µg/L	2		31.3	14.7	13.5 J	10	25 U	10 U	88.4	41.4	38.3	7.43	5.07	2.49	4.1	2.51	2.52	3.45	5.51	2.88	16.8	
FCCA	PW-94A	µg/L	2		1.63	1.54	1.7	1.39	0.68	0.81	0.67	0.76	0.71	2.24	25 U	25 U	2.23 J	1.93 J	2.54 J	11.4	4.91	11.6	4.78	
FCCA	PW-95A	µg/L	2		1.98	5.75	3.8	0.24 J	2.1	0.5 U		0.84	0.76	3.16	1.43	25 U	1.04	1.41	0.95	0.76	0.38 J	0.235 J	2.62	
Dump Master	PW-30A	µg/L	2	1 U	0.24 J	1.1 U	1.1	1.1 U	1.1 U	1.1 U	0.2 U	0.5 U	0.5 U	5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.00 U	2.00 U
Dump Master	PW-73B	µg/L	2	8.3	5.14	9.36	7.62	6.85	6.58	3.48	2.54	2.45	1.76	2.1	1.44	1.64	0.5 U	1.65	1.2	2.08	1.36	2.46	1.30	
Non Hot Spot Monitoring Wells																								
Acid Sump	PW-10	µg/L	2	1 U	0.13 J	0.5 U		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400							
Acid Sump	PW-14	µg/L	2	1 U															0.5 U					
Acid Sump	PW-16A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U		
Acid Sump	PW-19A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Acid Sump	PW-80A	µg/L	2	1.2	0.5 U	0.23 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.77	1.9	0.83	0.71	2.35	
Acid Sump	PW-81A	µg/L	2	1 U															0.41 J					
Acid Sump	PW-82A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	

Table A-5. Monitoring Well Concentrations for Vinyl Chloride (VC) in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁵	Spring 2015	Spring 2016 ⁶	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	
Acid Sump	PW-98A	µg/L	2		8.86¹	131		78.2	25.3	34.4	0.23 J	0.6	0.54	2.56	5 U	5 U	13	52.1	64.1	109	114	110	196	
Acid Sump	FW-6	µg/L	2				0.5 U ⁴	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400	
Material Recycle	PW-87A	µg/L	2	1 U	0.93	1.35	1.12	0.98	0.89	0.34 J	0.55	0.5 U	0.68	0.28 J	0.5 U	0.29 J	0.29 J	0.31 J	0.37 J	0.27 J	0.16 J	0.400 U	0.400 U	
Material Recycle	PW-88A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.26 J	0.400 U	0.400 U	
Amm Sulfate Stg	PW-20A	µg/L	2	1 U														0.5 U						
Amm Sulfate Stg	PW-84A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.260 J	
Amm Sulfate Stg	PW-89A	µg/L	2	1.2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Amm Sulfate Stg	PW-92A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-31A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-70AR	µg/L	2	1 U			0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U						0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-72A	µg/L	2	1 U													0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-101A	µg/L	2				0.5 U ³	36.5	31.2	26.4	0.2 U	1.05	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.26 J	0.52 J	1.83	0.400 U	
Dump Master	PW-46A	µg/L	2	1 U	1.65	2.28	2.03	1.99	1.89	1.32	1.62	0.63	1.19	0.5 U	0.62	0.5 U	0.5 U	0.5 U	0.5 U	0.36 J	0.5 U	0.400 U	0.400 U	
Dump Master	PW-74B	µg/L	2	1 U	0.5 U	0.53	0.49 J	0.5 U	0.5 U	0.5 U	0.66	0.5 U	0.82	0.36 J	0.31 J	0.75	0.44 J	0.34 J	0.38 J	0.51	0.35 J	0.529	0.420	
Dump Master	PW-75A	µg/L	2	1.8	0.5 U	0.13 J	0.5 U	0.12 J	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Dump Master	PW-91A	µg/L	2	3	0.35 J	0.24 J	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.22 J	0.400 U	0.470	
Perimeter Monitoring Wells																								
Acid Sump	PW-15AR	µg/L	2	5 U														0.5 U						
Acid Sump	PW-76A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Acid Sump	PW-77A	µg/L	2	50 U	0.49 J	3.61	3.15	2.86	1.89	1.13	0.41 J	0.72	0.69	1.26	0.5 U	0.37 J	0.2 J	0.6	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	3.66
Acid Sump	PW-78A	µg/L	2	2 U	0.14 J	0.36 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 J	0.5 U	0.26 J	0.28 J	0.22 J	0.2 J	0.25 J	0.253 J	0.230 J	
Acid Sump	PW-79A	µg/L	2	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	

Notes:

¹ Initial samples were collected in July 2009 for PW-98A and PW-99A.

² Initial samples were collected in May 2010 for E-11.

³ Initial samples were collected in August 2010 for PW-100A and PW-101A.

⁴ Initial samples were collected in April 2010 for FW-6.

⁵ The fall 2014 sampling event was conducted in February 2015.

⁶ The spring 2016 event was a sitewide groundwater and surface water sampling event.

⁷ Initial samples were collected in fall 2016 for EI-5, I-2, and I-5.

µg/L = microgram per liter

FCCA = former crucible cleaning area

Amm Sulfate Stg = ammonium sulfate storage

J = estimated value

D = dilution

U = not detected above reporting limit

E = estimated value above the calibration range

Blank cells indicate no analysis performed.

10-year rolling table. Refer to past annual reports for a full records of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

Table A-6. Monitoring Well Concentrations for 1,1 Dichloroethane (DCA) in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁵	Spring 2015	Spring 2016 ⁶	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018
Hot Spot Monitoring Wells																							
Acid Sump	PW-11	µg/L	3,700	54.3	3.77	3.79	0.5 U	8.15	2.68	3.12	31.6	29.6	24.8	80.8	52.9	16.3	31.8	86.3	5.57	10.3	26.1	4.09	7.87
Acid Sump	PW-12	µg/L	3,700	901	321	255	2.5 U	312	189	289	296	774 E	725	299	335	236	426	199	173	36.8	26.9	124	99.7
Acid Sump	PW-13	µg/L	3,700	1,660	3,310	1,710	0.77 J	1,524	789	1,125	117 E	112	105	1,280	2,400	1,970	3,030	308	1,010	568	715	2,670	1,710
Acid Sump	PW-99A	µg/L	3,700		28.5 ¹	60.6	0.5 U	23.9	41.5	14.8	56.6	52.3	49.1	37.3	54.8	46.9	15.9	32.5	120 E	34.9	58.2	68.2	76.2
Acid Sump	EI-5	µg/L	3,700																108 ⁷	2,950	731	572	169
Acid Sump	E-11	µg/L	3,700				0.5 U ²	0.5 U	0.5 U	0.43 J	0.46 J	0.5 U	0.25 J	0.55	0.53	1.43	0.81	0.19 J	0.41 J	0.96	2.86	2.47	
Acid Sump	I-2	µg/L	3,700															6,460 ⁷	6,550	11,800	13,200	17,600	
Acid Sump	I-3	µg/L	3,700															0.95 ⁷	341	4.35	103	12.5	
Material Recycle	PW-42A	µg/L	3,700	21.8	5.52	4.72	0.5 U	3.37	2.01	0.84	1.89	3.07	2.09	2.2 J	1.91	1.61	1.26	1.4	1.17	1.04	1.42	28.1	46.8
Material Recycle	PW-85A	µg/L	3,700	17.4	6.06	11.2	0.5 U	8.26	4.18	5.54	3.15	3.86	4.28	3.5	3.59	2.27	2.34	1.66	1.31	1.95		3.96	10.4
Material Recycle	PW-86A	µg/L	3,700	243	3.97	0.52	0.5 U	0.5 U	0.11 J	0.5 U	0.5 U	0.5 U	0.5 U	0.42 J	0.17 J	0.89	0.5 U	0.5 U	0.28 J	0.5 U	0.764 J	0.764 J	1.16
Amm Sulfate Stg	PW-01A	µg/L	3,700	24.3	27.2	1.07	0.5 U	0.98	0.88	0.55	0.72	14	12.7	9.17	10.1	9.14	7.61	7.38	0.75	0.5 U	5.44	7.29	
Amm Sulfate Stg	PW-03A	µg/L	3,700	49.9	0.49 J	0.51	0.5 U	0.5 U	0.5 U	0.38 J	0.3 J	0.29 J	0.26 J	0.18 J	0.17 J	0.5 U	0.5 U	0.21 J	0.28 J	0.580	0.798		
Amm Sulfate Stg	PW-83A	µg/L	3,700	11.4	2	0.57	0.5 U	0.5 U	0.5 U	0.5 U	0.89	0.51	0.51	0.87	0.5	0.24 J	0.3 J	0.38 J	0.48 J	0.47 J	0.870	0.580	
FCCA	PW-45A	µg/L	3,700	128 D	2.06	0.22 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.21 J	0.62	0.5 U	0.35 J	1.29	0.5 U	0.5 U	1.8	0.856	4.06	
FCCA	PW-68A	µg/L	3,700	53.1	4.95	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.461
FCCA	PW-69A	µg/L	3,700	648	234	299	5 U	141	189	135	56.8	100	97.3	149	11.3	38.3	38	31.5	38.3	84.7	112	143	28.5
FCCA	PW-71A	µg/L	3,700	51.4	0.12 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.56	1.32	0.56	0.5 U	0.5 U	0.5 U	0.5 U	0.27 J	0.25 J	0.400 U	3.25	0.400	
FCCA	PW-100A	µg/L	3,700				5.5 ³	2,250	2,100	1,850	222	10.7	10.2	2.78	3.18	2.54	2.2	0.99	1.06	1,680	2,040	1,970	56.7
FCCA	MW-01A	µg/L	3,700	58.2	0.5 U	0.28 J	0.5 U	0.5 U	0.5 U	0.5 U	5.14	6.97	6.59	17.6	14	13.5	15.2	8.2	10.4	12.6	12	10.3	19.4
FCCA	MW-02A	µg/L	3,700	154	4.69	3.81	0.55	4.89	3.81	1.25	4.43	2.11	2.02	1.81	1.87	0.5 U	1.53	1.32	1.03	1.21	1.46	1.46	6.86
FCCA	MW-03A	µg/L	3,700	2.806	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	1.54	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.355 J	0.276 J
FCCA	MW-04A	µg/L	3,700	75	5.35	4.82	0.5 U	4.68	2.84	2.11	2.07	3.36	3.18	1.96	2.16	1.6	1.81	0.65 J	0.69	0.79	0.76	0.400 U	0.673
FCCA	PW-93A	µg/L	3,700		2,670	1,130	25	9,770	3,380	6,218	3,150 E	185	166	171	83.4	58	83.1	59.2	49.7	105	94	81.3	112
FCCA	PW-94A	µg/L	3,700		24.3	88.3	0.5 U	125	8.96	81	43.3	60.1	58.2	75.4	118	121	166	187	130	599	522	358	469
FCCA	PW-95A	µg/L	3,700		335	108	0.5 U	60.6	3.16	45.1		43.9	41.6	50.2	40.3	79.8	45.8	63.7	36.4	799	275	66.1	155
Dump Master	PW-30A	µg/L	3,700	34.4	20.2	10.2	1.1 U	5.6	4.5	3.9	4.54	4.25	7.54	4.57	5.51	4.23 J	7.05	10.6	3.51	7.08	10.3	6.23	11.2
Dump Master	PW-73B	µg/L	3,700	41.6	2.83	4.51	0.5 U	3.54	1.18	1.65	2.85	1.11	1.17	1.43	1.23	1.25	0.5 U	1.4	1.15	1.97	0.93	1.73	0.890
Non Hot Spot Monitoring Wells																							
Acid Sump	PW-10	µg/L	3,700	327	58.8	31.8	0.5 U	35.1	23.9	22.2	18.1	15.6	14.9	67.5	81.3	60.9	77.5	26.7	24.9	37.3	50.7	27.7	31.5
Acid Sump	PW-14	µg/L	3,700	2.2														0.5 U					
Acid Sump	PW-16A	µg/L	3,700	1 U	1.12	0.69	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.6	0.28 J	0.24 J	0.34 J	0.36 J	0.87	0.42 J	0.37 J	0.217 J	
Acid Sump	PW-19A	µg/L	3,700																				

Table A-6. Monitoring Well Concentrations for 1,1 Dichloroethane (DCA) in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁵	Spring 2015	Spring 2016 ⁶	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	
Acid Sump	PW-98A	µg/L	3,700		170 ¹	253	3.42	503	268	384	7.63	39.4	37.1	12	18.8	52.2	111	311	308	621	552	515	1,170	
Acid Sump	FW-6	µg/L	3,700				4.82 ⁴	6.13	3.1	4.18	0.73	3.78	2.55	0.31 J	0.35 J	0.21 J	76.4	0.37 J	0.47 J	0.96	0.98	0.685	1.12	
Material Recycle	PW-87A	µg/L	3,700	1.5	0.59	0.62	0.5 U	0.23 J	0.5 U	0.5 U	0.5 U	0.31 J	0.5 U	0.17 J	0.16 J	0.5 U	0.15 J	0.26 J	0.5 U	0.5 U	0.400 U	0.400 U		
Material Recycle	PW-88A	µg/L	3,700	1 U	0.5 U	0.2 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 J	0.400 U	0.400 U	
Amm Sulfate Stg	PW-20A	µg/L	3,700	1 U														0.5 U						
Amm Sulfate Stg	PW-84A	µg/L	3,700	6.5	1.35	3.65	0.5 U	2.49	2.18	1.98	1.46	3.12	2.9	2.12	2.02	2.2	2.25	1.76	1.15	1.41	1.47	4.34	13.0	
Amm Sulfate Stg	PW-89A	µg/L	3,700	5.7	0.58	0.39 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.31 J	0.33 J	0.62	0.5	0.27 J	0.5 U	0.62	1.19	1.25	1.81	3.07		
Amm Sulfate Stg	PW-92A	µg/L	3,700	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-31A	µg/L	3,700	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-70AR	µg/L	3,700	1 U				0.16 J	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U					0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
FCCA	PW-72A	µg/L	3,700	3.1													0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
FCCA	PW-101A	µg/L	3,700				1.56 ³	671	591	513	2.99	0.95	0.87	0.75	0.42 J	0.51	1.85	0.51	0.67	2.85	2.89 J	13.7	6.03	
Dump Master	PW-46A	µg/L	3,700	9.5	4.31	4.27	0.5 U	2.86	2.64	1.34	5.27	1.16	4.81	0.68	1.66	0.55	0.36 J	0.5 U	0.68	0.93	0.5 U	0.396 J	0.400 U	
Dump Master	PW-74B	µg/L	3,700	3.2	0.5 U	2.86	0.5 U	0.83	1.15	0.49 J	3.47	0.5 U	2.84	1.31	0.88	2.18	1.18	1.14	0.64	1.16	0.65	0.812	0.640	
Dump Master	PW-75A	µg/L	3,700	54.6	8.62	8.13	0.5 U	9.68	2.33	6.47	3.21	1.85	1.24	1.87	1.17	2.98	2.53	3.48	2.17	5.13	2.22	8.06	5.70	
Dump Master	PW-91A	µg/L	3,700	63.2	4.31	1.3	0.5 U	1.52	0.89	0.84	3.05	0.69	2.84	3.8	2.44	4.73	5.86	1.8	3.4	4.73	5.67	3.57		
Perimeter Monitoring Wells																								
Acid Sump	PW-15AR	µg/L	3,700	5 U														0.76						
Acid Sump	PW-76A	µg/L	3,700	2.3	0.34 J	2.04	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 J	0.33 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Acid Sump	PW-77A	µg/L	3,700	189	212	227	0.5 U	186	143	142	156	134	126	83	83.8	46.4	70.2	55.5	20.3	36.9	36.5	37.8	40.4	
Acid Sump	PW-78A	µg/L	3,700	118	141	114	0.5 U	87.2	73.4	25.8	22.9	18.1	17.2	62	59.3	65.1	51.2	58	58.8	59.7	58.9	51.0		
Acid Sump	PW-79A	µg/L	3,700	12.3	1.88	5.52	0.5 U	1.64	1.26	1.16	0.55	0.67	0.61	2.56	1.52	0.5 U	0.59	1.23	0.5 U	14.4	6.77	13.3	21.3	

Notes:

¹ Initial samples were collected in July 2009 for PW-98A and PW-99A.

² Initial samples were collected in May 2010 for E-11.

³ Initial samples were collected in August 2010 for PW-100A and PW-101A.

⁴ Initial samples were collected in April 2010 for FW-6.

⁵ The fall 2014 sampling event was conducted in February 2015.

⁶ The spring 2016 event was a sitewide groundwater and surface water sampling event.

⁷ Initial samples were collected in fall 2016 for I-5, I-2, and I-5.

µg/L = microgram per liter

FCCA = former crucible cleaning area

Amm Sulfate Stg = ammonium sulfate storage

J = estimated value

D = dilution

U = not detected above reporting limit

E = estimated value above the calibration range

Blank cells indicate no analysis performed.

10-year rolling table. Refer to past annual reports for a full records of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

Table A-7. Monitoring Well Concentrations for Nitrate in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁴	Spring 2015	Spring 2016 ⁵	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	
Hot Spot Monitoring Wells																								
Acid Sump	PW-11	mg/L	10	10.6	7	6	5.5	5.2	4.8	5 U	7	6.25	5.69	6.78	4.69	5.43	1.51	3.59	4.52	2	7.08	1.18	1.04	
Acid Sump	PW-12	mg/L	10	0.1 U	5 U	5 U	5 U	5 U	5 U	5 U	0.42	0.068 J	5 U	0.008 U	0.1 U	0.006 J	0.1 U	0.33 U	0.28	0.48	0.34	0.322	0.250 U	
Acid Sump	PW-13	mg/L	10	97.5	160	33	29	27	22	22	1.44	1.02	0.99	39.3	60.5	45.8	57.7	0.85	9.53	3.39	5.67	20.0	6.28	
Acid Sump	PW-99A	mg/L	10		2.31 ¹	5 U	5 U	5 U	5 U	5 U	0.97	0.96	0.94	5.9	13.2	6.66	0.34	2.57	6.38	1.51	1.33	1.10	0.250 U	
Acid Sump	EI-5	mg/L	10																0.069 J ⁶	0.1 U	0.12	0.250 U	0.250 U	
Acid Sump	E-11	mg/L	10				5 U ²	5 U	5 U	5 U	0.24	0.21	2.6	16.7	0.1 U	0.031 J	0.004 J	0.085 J	2.17	0.33	0.1 U	6.93	0.250 U	
Acid Sump	I-2	mg/L	10																0.1 U ⁶	0.1 U	0.11	0.250 U	13.5	
Acid Sump	I-3	mg/L	10															16.5 ⁶	0.17 J	1.88	1.86	34.3		
Material Recycle	PW-42A	mg/L	10	0.1 U														0.09 U						
Material Recycle	PW-85A	mg/L	10	1.02														3.06						
Material Recycle	PW-86A	mg/L	10	0.1 U														0.85						
Amm Sulfate Stg	PW-01A	mg/L	10	20 U														1.03 U						
Amm Sulfate Stg	PW-03A	mg/L	10	13.1														19.9						17.5
Amm Sulfate Stg	PW-83A	mg/L	10	3.41														0.632						
FCCA	PW-45A	mg/L	10	0.1 U														0.17 U						
FCCA	PW-68A	mg/L	10	2.33														1.45						
FCCA	PW-69A	mg/L	10	0.1 U							0.017 U	0.1 U	0.1 U	0.008 U			0.007 J	0.1 U	0.09 U	0.1 U	0.1 U	0.1 U	0.250 U	0.250 U
FCCA	PW-71A	mg/L	10	0.12														0.12 U						
FCCA	PW-100A	mg/L	10							0.017 U	0.1 U	0.1 U	0.008 U			0.033 J	0.029 J	0.1 U	0.1 U	0.1 U	0.1 U	0.250 U	0.250 U	
FCCA	MW-01A	mg/L	10	0.1 U														0.26						
FCCA	MW-02A	mg/L	10	0.1 U														0.09 J						
FCCA	MW-03A	mg/L	10	0.1 U														0.1 U						
FCCA	MW-04A	mg/L	10	1.22														0.1 U						
FCCA	PW-93A	mg/L	10							0.017 U	0.1 U	0.1 U	0.008 U			0.014 J	0.004 J	0.1 U	0.037 J	0.1 U	0.1 U	0.250 U	0.250 U	
FCCA	PW-94A	mg/L	10							0.017 U	0.1 U	0.1 U	0.008 U			0.004 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.250 U	0.250 U	
FCCA	PW-95A	mg/L	10							0.33	0.18	0.1 U	0.008 U			0.487	0.588	0.29 U	0.33	0.57	0.57	1.13	0.250 U	
Dump Master	PW-30A	mg/L	10	0.66														0.83						
Dump Master	PW-73B	mg/L	10	0.1 U														0.11 U						
Non Hot Spot Monitoring Wells																								
Acid Sump	PW-10	mg/L	10	0.1 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.489	0.205	0.126	0.926	0.36 U	0.507	0.25	0.38	0.442	0.250 U		
Acid Sump	PW-14	mg/L	10	0.1 U														2.78						
Acid Sump	PW-16A	mg/L	10	0.1 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.67	1.2	1.87	1.5	1.34	1.84	0.93	0.78	0.867			
Acid Sump	PW-19A	mg/L	10	1.63	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	3.1	2.4	2.71	2.96	2.82	1.52	1.92	3.64	2.84	2.11		
Acid Sump	PW-80A	mg/L	10	4.22	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.584	1.11	0.252	0.735	0.97	0.769	0.8	0.48	0.420	0.250 U		
Acid Sump	PW-81A	mg/L	10	0.1 U													0.086 J							
Acid Sump	PW-82A	mg/L	10	9.25	9	7	6	5	6	5	6.81	6.23	5.99	4.34	2.61	2.59	3.83	3.72	3.48	2.86	2.45	2.93	1.65	

Table A-7. Monitoring Well Concentrations for Nitrate in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ⁴	Spring 2015	Spring 2016 ⁵	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	
Acid Sump	PW-98A	mg/L	10		8.76 ¹	5 U	7.5	6.9	2.4	2.4	2.65	13.3	11.9	0.008 U	1.16	5.41	21.7	24.3 J	9.29	13.9	10.6	8.10	18.3	
Acid Sump	FW-6	mg/L	10				5 U ³	5 U	5 U	5 U	1.81	5 U	5 U	1.83	1.48	1.59	0.895 J	1.31	1.16	0.12	0.58	0.250 U	0.250 U	
Material Recycle	PW-87A	mg/L	10	0.1 U														0.1 U						
Material Recycle	PW-88A	mg/L	10	0.1 U														0.1 U						
Amm Sulfate Stg	PW-20A	mg/L	10	10.1														4.6						
Amm Sulfate Stg	PW-84A	mg/L	10	0.65														1.35						
Amm Sulfate Stg	PW-89A	mg/L	10	177	290	45	38	28	23	22	18	18	76.5	40.8	116	74.3	77	140	59.6 J	8.38	8.5	21.2 J	4.49	
Amm Sulfate Stg	PW-92A	mg/L	10	1.43														0.1 U						
FCCA	PW-31A	mg/L	10	4.66														13.2					10.7	
FCCA	PW-70AR	mg/L	10	0.1 U														0.634						
FCCA	PW-72A	mg/L	10	0.1 U														0.57						
FCCA	PW-101A	mg/L	10										0.017 U	0.1 U	0.1 U	0.142		0.012 J	0.1 U	0.1 U	0.1 U			
Dump Master	PW-46A	mg/L	10	0.1 U																0.26 U				
Dump Master	PW-74B	mg/L	10	0.23															0.13 U					
Dump Master	PW-75A	mg/L	10	0.1 U															0.65					
Dump Master	PW-91A	mg/L	10	0.1 U														0.1 U						
Perimeter Monitoring Wells																								
Acid Sump	PW-15AR	mg/L	10	0.1 U														0.66						
Acid Sump	PW-76A	mg/L	10	0.62	5 U		5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.516	0.408	0.547	0.265	0.41 U	0.64	0.31	0.31	0.276	0.344	
Acid Sump	PW-77A	mg/L	10	0.1 U	5 U		5 U	5 U	5 U	5 U	0.31	5 U	5 U	0.234	0.402	0.274	0.312	0.27 U	0.461 U	0.24	0.34	0.325	0.250 U	
Acid Sump	PW-78A	mg/L	10		5 U		5 U	5 U	5 U	5 U	0.11	5 U	5 U	0.315	0.411	0.315	0.507	0.46 U	0.319	0.49	0.42	0.561	5.21	
Acid Sump	PW-79A	mg/L	10	7.54	5 U		5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.55	0.312	0.029 J	0.022 J	0.16 U	0.078 J	2.31	1.56	2.51	2.29	

Notes:

¹ Initial samples were collected in July 2009 for PW-98A and PW-99A.

² Initial samples were collected in May 2010 for E-11.

³ Initial samples were collected in April 2010 for FW-6.

⁴ The fall 2014 sampling event was conducted in February 2015.

⁵ The spring 2016 event was a sitewide groundwater and surface water sampling event.

⁶ Initial samples were collected in fall 2016 for I-5, I-2, and I-5.

Amm Sulfate Stg = ammonium sulfate storage

FCCA = former crucible cleaning area

J = estimated value

mg/L = milligram per liter

U = not detected above reporting limit

Blank cells indicate no analysis performed.

10-year rolling table. Refer to past annual reports for a full records of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

Table A-8. Monitoring Well Concentrations for Ammonium in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ¹	Spring 2015	Spring 2016 ²	Fall 2016	Spring 2017	Fall 2017	Fall 2018	Fall 2018	
Hot Spot Monitoring Wells																								
Acid Sump	PW-11	mg/L	250	8														4.85						
Acid Sump	PW-12	mg/L	250	2														0.325						
Acid Sump	PW-13	mg/L	250	9														2.925						
Acid Sump	PW-99A	mg/L	250															0.063 U						
Acid Sump	EI-5	mg/L	250																					
Acid Sump	E-11	mg/L	250															0.25						
Acid Sump	I-2	mg/L	250																					
Acid Sump	I-3	mg/L	250																					
Material Recycle	PW-42A	mg/L	250	0.1 U														0.121						
Material Recycle	PW-85A	mg/L	250	0.4														18.3	0.063 U					
Material Recycle	PW-86A	mg/L	250	0.9														0.063 U						
Amm Sulfate Stg	PW-01A	mg/L	250	4,413	150	111	100	81	69	75	56	139	129	119.8	735	229	224	176.3	188.8	2,400	1,400	723	189	
Amm Sulfate Stg	PW-03A	mg/L	250	274	60	56	53	35	35	29	19	71.1	63.6	80	86.4	70	69.9	67	59.63	115.5	187.5	166	204	
Amm Sulfate Stg	PW-83A	mg/L	250	42.6	13	33	26	23	18	15	10	18.5	25.3	19.5	11.5	14.1		21.25	14	28.13	33.75	33	35.8	
FCCA	PW-45A	mg/L	250	0.3														0.175						
FCCA	PW-68A	mg/L	250	0.4														0.063 U						
FCCA	PW-69A	mg/L	250	0.8														1.113						
FCCA	PW-71A	mg/L	250	0.4														0.675						
FCCA	PW-100A	mg/L	250															0.263						
FCCA	MW-01A	mg/L	250	0.1 U														0.063 U						
FCCA	MW-02A	mg/L	250	0.3 U														0.049 J						
FCCA	MW-03A	mg/L	250	0.1 U														0.079 J						
FCCA	MW-04A	mg/L	250	0.2														0.063 U						
FCCA	PW-93A	mg/L	250															0.675						
FCCA	PW-94A	mg/L	250															1.15						
FCCA	PW-95A	mg/L	250															0.063 U						
Dump Master	PW-30A	mg/L	250	0.1 U														0.064						
Dump Master	PW-73B	mg/L	250	0.1 U														0.063 U						
Non Hot Spot Monitoring Wells																								
Acid Sump	PW-10	mg/L	250	1.8														0.063 U						
Acid Sump	PW-14	mg/L	250	0.1 U														0.063 U						
Acid Sump	PW-16A	mg/L	250	0.1 U														0.063 U						
Acid Sump	PW-19A	mg/L	250	0.1 U														0.063 U						
Acid Sump	PW-80A	mg/L	250	2.7														0.575						
Acid Sump	PW-81A	mg/L	250	0.1 U														0.119						
Acid Sump	PW-82A	mg/L	250	82														25.38						

Table A-8. Monitoring Well Concentrations for Ammonium in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ¹	Spring 2015	Spring 2016 ²	Fall 2016	Spring 2017	Fall 2017	Fall 2018	Fall 2018
Acid Sump	PW-98A	mg/L	250														0.041 J						
Acid Sump	FW-6	mg/L	250														0.063 U						
Material Recycle	PW-87A	mg/L	250	0.6													1.075						
Material Recycle	PW-88A	mg/L	250	6.5													3.638						
Amm Sulfate Stg	PW-20A	mg/L	250	0.1 U													0.063 U						
Amm Sulfate Stg	PW-84A	mg/L	250	0.2	0.6 U	0.6 U	0.5 U	0.6 U	0.6 U	0.1 U	0.1 U	0.018 U	0.041 J	0.06 U	0.027 J	0.093 U	0.063 U	0.048 J	0.15	0.0200 U	0.0200 U		
Amm Sulfate Stg	PW-89A	mg/L	250	107	80	31.3	23	20	18	15	13	11	10.16	48	78.1	40	31.5	0.093	25.25	16.88	8.913	40.8	18.8
Amm Sulfate Stg	PW-92A	mg/L	250	8.8	8.8	6.3	5	5	5	6 U	5.1	4.44	3.96	5.01	4.24	4.49	4.313	4.388	4.725	2.375	3.85	3.45	
FCCA	PW-31A	mg/L	250	0.1 U													0.063 U						
FCCA	PW-70AR	mg/L	250	0.1 U													0.063 U						
FCCA	PW-72A	mg/L	250	0.1 U													0.063 U						
FCCA	PW-101A	mg/L	250														0.238						
Dump Master	PW-46A	mg/L	250	0.4													0.063 U						
Dump Master	PW-74B	mg/L	250	0.1 U													0.188						
Dump Master	PW-75A	mg/L	250	0.6													0.03 J						
Dump Master	PW-91A	mg/L	250	1.1													0.838						
Perimeter Monitoring Wells																							
Acid Sump	PW-15AR	mg/L	250	0.1 U													0.03 J						
Acid Sump	PW-76A	mg/L	250	0.1 U													0.063 U						
Acid Sump	PW-77A	mg/L	250	0.5													0.063 U						
Acid Sump	PW-78A	mg/L	250	0.1 U													0.063 U						
Acid Sump	PW-79A	mg/L	250	0.3													0.063 U						

Notes:

¹ Initial samples were collected in July 2009 for PW-98A and PW-99A.

² The fall 2014 sampling event was conducted in February 2015.

Amm Sulfate Stg = ammonium sulfate storage

FCCA = former crucible cleaning area

J = estimated value

mg/L = milligram per liter

U = not detected above reporting limit

Blank cells indicate no analysis performed.

10-year rolling table. Refer to past annual reports for a full records of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

Table A-9. Monitoring Well Concentrations for Fluoride in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ³	Spring 2015	Spring 2016 ⁴	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	
Hot Spot Monitoring Wells																								
Acid Sump	PW-11	mg/L	4	2.44	2	2	2 U	2 U	2 U	1 U	1 U	1.73	1.43	2.99	2.51	2.4	2.68	2.54	2.18	2.30	2.32			
Acid Sump	PW-12	mg/L	4	0.7	2	1 U	1 U	1 U	1 U	1 U	9.65	9.56	2.27	1.77	2.8	2.97	3.04	3.13	2.45	2.33	2.96			
Acid Sump	PW-13	mg/L	4	43.2	69	31	27	24	16	21	19	17	14	28.7	27.6	25.9	31.2	17.7	17.6	16.8	17	39.0	28.1	
Acid Sump	PW-99A	mg/L	4			10	9.8	7.3	9.4	3.4	15	13	12	9.69	9.86	12.8	12.9	9.56	10	10.1	9.58	11.3		
Acid Sump	EI-5	mg/L	4															17.5 ⁵	26.1	20.9	19.1	20.5		
Acid Sump	E-11	mg/L	4				10 ¹	9	9	8	7.8	3.1	2.9	3.07	2.96	5.25	5.09	5.94	6.84	6.41	6.19	4.86	5.33	
Acid Sump	I-2	mg/L	4															9.33 ⁵	10.9	13.3	8.67	24.4		
Acid Sump	I-3	mg/L	4															4.4 ⁵	2.57 J	2.94	2.22	2.81		
Material Recycle	PW-42A	mg/L	4	0.16														0.13 J						
Material Recycle	PW-85A	mg/L	4	1														0.65 J						
Material Recycle	PW-86A	mg/L	4	0.1 U														1.4						
Amm Sulfate Stg	PW-01A	mg/L	4	20 U														0.78 U						
Amm Sulfate Stg	PW-03A	mg/L	4	1.44														1.2						
Amm Sulfate Stg	PW-83A	mg/L	4	0.16														0.622 J						
FCCA	PW-45A	mg/L	4	0.1 U														0.094 J						
FCCA	PW-68A	mg/L	4	0.15														0.19 J						
FCCA	PW-69A	mg/L	4	11								1.39		6.14				8.89				10.2		
FCCA	PW-71A	mg/L	4	1.1														1.8						
FCCA	PW-100A	mg/L	4								11.7	10.3						0.11 U				1.00 U		
FCCA	MW-01A	mg/L	4	0.12														0.12 J						
FCCA	MW-02A	mg/L	4	0.17														0.43 J						
FCCA	MW-03A	mg/L	4	0.16														0.18 J						
FCCA	MW-04A	mg/L	4	0.18														0.18 J						
FCCA	PW-93A	mg/L	4								9.85		1.97					3.99				3.56	2.78 J	
FCCA	PW-94A	mg/L	4								9.75							7.04				7.10	6.26	
FCCA	PW-95A	mg/L	4								7.33							9.84					4.52 J	
Dump Master	PW-30A	mg/L	4	0.38														0.27 J						
Dump Master	PW-73B	mg/L	4	0.15														0.32 J						
Non Hot Spot Monitoring Wells																								
Acid Sump	PW-10	mg/L	4	50	24	25	20	18	15	14	9	12	11.3	26.2	20.1	25.8	42.1	26.7	19.2	22.8	21	20.1	22.0	
Acid Sump	PW-14	mg/L	4	2.06														0.86 J						
Acid Sump	PW-16A	mg/L	4	0.1 U	1 U		1 U	1 U	1 U	1 U	1 U	1 U	0.01 U	0.213 J	0.066 J	0.081 J	0.24 J	0.099 U	0.073 J	0.061 J	1.00 U			
Acid Sump	PW-19A	mg/L	4	0.1	1 U									0.443	0.539 J	0.119 J	0.146 J	0.28 J	0.205 U	1.21	0.057 J	1.00 U	1.00 U	
Acid Sump	PW-80A	mg/L	4	0.17	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.486	0.273 J	0.143 J	0.186 J	0.35 J	0.561 J	0.28 J	0.13 J	1.00 U	1.00 U		
Acid Sump	PW-81A	mg/L	4	0.1 U													0.065 J							
Acid Sump	PW-82A	mg/L	4	0.42	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.648	0.51 J	0.429 J	0.678 J	0.982 J	0.626 J	0.65 J	0.62 J	1.00 U	1.00 U		

Table A-9. Monitoring Well Concentrations for Fluoride in 2009-2018

ATI Millersburg Operations, Oregon

Area	Well	Units	Cleanup Standard	Baseline Fall 2000	Spring 2009	Fall 2009	Spring 2010	Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014 ³	Spring 2015	Spring 2016 ⁴	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018
Acid Sump	PW-98A	mg/L	4			19				11.1	10.2		9.11	9.87	8.84	13.7	16.8	17.4	15.9	17.6	14.9	65.0 J	
Acid Sump	FW-6	mg/L	4				2 ²	1.8	1.8	1.5	1.5	1.2	1.1	7.34	4.3	8.47	42.8	9.8	11.7	6.23	8.96	9.45	7.06
Material Recycle	PW-87A	mg/L	4	0.27														0.32 J					
Material Recycle	PW-88A	mg/L	4	0.4														0.55 J					
Amm Sulfate Stg	PW-20A	mg/L	4	0.27														0.29 J					
Amm Sulfate Stg	PW-84A	mg/L	4	0.83														0.64 J					
Amm Sulfate Stg	PW-89A	mg/L	4	17	27	10	8.2	7.5	7.8	6.4	5.5	5.5	9.87	9	9.9	13.5	14.5	13.6	11.2	17.2	16.1	17.0	18.2
Amm Sulfate Stg	PW-92A	mg/L	4	0.23														0.54 J					
FCCA	PW-31A	mg/L	4	0.13														0.046 J					
FCCA	PW-70AR	mg/L	4	0.1 U														0.093 J					
FCCA	PW-72A	mg/L	4	5.62														2.64					
FCCA	PW-101A	mg/L	4										1.57	1.46				1.88					
Dump Master	PW-46A	mg/L	4	0.29														0.19 J					
Dump Master	PW-74B	mg/L	4	0.17														0.29 J					
Dump Master	PW-75A	mg/L	4	0.8														1.12					
Dump Master	PW-91A	mg/L	4	0.6														1.15					
Perimeter Monitoring Wells																							
Acid Sump	PW-15AR	mg/L	4	0.1 U														0.32 J					
Acid Sump	PW-76A	mg/L	4	0.35	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.524	0.374 J	0.286 J	0.357 J	0.47 J	0.324 U	0.67 J	0.25 J	1.00 U	1.00 U
Acid Sump	PW-77A	mg/L	4	0.64	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.686	0.464 J	0.287 J	0.311 J	0.45 J	0.426 U	0.35 J	0.26 J	1.00 U	1.00 U
Acid Sump	PW-78A	mg/L	4	0.19	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.494	0.288 J	0.273 J	0.33 J	0.45 U	0.678 J	0.37 J	0.27 J	1.00 U	1.00 U
Acid Sump	PW-79A	mg/L	4	0.96	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.01 U	0.236 J	0.127 J	0.153 J	0.29 J	0.166 U	1.06	0.077 J	1.15	2.00

Notes:

¹ Initial samples were collected in May 2010 for E-11.

² Initial samples were collected in April 2010 for FW-6.

³ The fall 2014 sampling event was conducted in February 2015.

⁴ The spring 2016 event was a sitewide groundwater and surface water sampling event.

⁵ Initial samples were collected in fall 2016 for I-1, I-2, and I-5.

Amm Sulfate Stg = ammonium sulfate storage

FCCA = former crucible cleaning area

J = estimated value

mg/L = milligram per liter

U = not detected above reporting limit

Blank cells indicate no analysis performed.

10-year rolling table. Refer to past annual reports for a full records of historical concentrations.

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

Attachment B
Acid Sump Area Groundwater Quality Data

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Source Area Wells													
			TMW-1													
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13 ¹	7/14 ¹	2/15 ²	6/15	6/16 ³
CVOCs																
1,1,1-TCA	µg/L	200	48,200	11,400	1,720	52.3	1,120	26.9	712	52	48	548	673,000	190	23.4 J	97.1
1,1-DCA	µg/L	3,700	1,350	4,790	10,000	8,575	9,800	5,486	4,030	975	928	3,990	60,000	463	612	2,000
1,2-DCA	µg/L	5	100 U	25 U	9.35 J	25 U	11.3 J	25 U	14.4 J	14	11.2	11 J	10,000 U	12.8	50 U	25 U
Chloroethane	µg/L	-	43.6 J	5,490	9,150	8,150	7,432	6,487	13,000 E	8,070 E	8,150	13,500	10,000 U	9,800 E	13,300	11,500
Trichloroethene	µg/L	5	382	92.4	95.1	12.3 J	54.5	25 U	44.3	7.44 J	5.31 J	10.7	10,000 U	10 U	50 U	9.79 J
cis-1,2-DCE	µg/L	70	100 U	25 U	25 U	25 U	25 U	25 U	13.1 J	8.29 J	7.99 J	25 U	10,000 U	10 U	50 U	25 U
trans-1,2-DCE	µg/L	100	100 U	25 U	25 U	25 U	25 U	25 U	10 U	10 U	10 U	25 U	10,000 U	10 U	50 U	--
1,1-DCE	µg/L	7	14,400	6,230	3,410	2,810	2,641	1,853	906	204	212	305	62,400	53.8	24.2 J	114
Vinyl Chloride	µg/L	2	100 U	98.7	123	78	89.8	45.7	1,370	764	703	128	10,000 U	142	243	90.8
Tetrachloroethylene	µg/L	5	83 J	18.9 J	31.4	25 U	16.1	25 U	37.1	18.3	15.6	25 U	10,000 U	4.6 J	50 U	25 U
Dissolved Hydrocarbon Gases																
Methane	µg/L	-	1.52	3.18	11.7	25.2	13	18.3	116	351	326	458	27.4	1,430	576	NS
Ethane	µg/L	-	1.13	3.26	1.08	2.08	1.09	2.15	0.52 J	0.53 J	0.49 J	0.839	171	1.7	0.844	NS
Ethene	µg/L	-	1.14	1.6	2.68	2.34	2.15	2.43	50.2	226	233	104	12.3	179	86.1	NS
General Chemistry																
Chloride	mg/L	-	35	50	50	41	ISV	38	44.8	49.6	35.1	74.3	746	67	66.9	29.1
Nitrate-N	mg/L	-	21	5 U	18	5 U	17	5 U	0.1 U	0.08 J	0.06 J	0.007 U	0.195	0.0531 J	0.0674 J	0.1 U
Sulfate	mg/L	-	10 U	10 U	10 U	10 U	ISV	10 U	8.87	0.079 J	0.1 U	3.26	183	0.1 U	0.266	0.82
Alkalinity	mg/L	-	569	923	847	782	ISV	467	493	692	653	719	200	535	484	495
Total Organic Carbon																
Total Organic Carbon	mg/L	-	5 U	320	800	312	ISV	284	312	180	167	287	180	282	338	209
Metals																
Iron	mg/L	-	31	66	63	55	ISV	46	41.6	54.2	51.6	43.8	347	87.4	75.4	51
Parameters																
ORP	mV	-	-18.2	-35.2	-79	-55.4	-94	-46.4	-90.5	-95.5	-97.45	29.6	30.8	-69.5	-48.2	-33.8
pH	units	-	6.13	6.98	6.28	6.78	6.23	6.83	6.33	6.23	6.3	6.17	5.52	5.81	6.38	5.69
Dissolved Oxygen	mg/L	-	0.89	0.63	0.36	0.48	0.36	0.11	0.33	0.33	0.38	0.98	2.72	1.83	3.83	0.84
Specific Conductance	µS/cm	-	732	840	2,418	813	2,433	885	2,424	2,424	2,371	13.65	65,537	1,620	1,567	1,317
Temperature	Celsius	-	15.33	14.84	15.29	14.81	15.28	14.59	15.29	15.99	14.79	14.69	17.25	14.5	16.04	19.03

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Source Area Wells													
			TMW-4													
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13 ¹	7/14 ¹	2/15 ²	6/15 ³	6/16 ³
CVOCs																
1,1,1-TCA	µg/L	200	1,170,000	721,000	583,000	388,000	343,000	168,000	537,000 E	506,000 E	495,000	595,000	731,000	725,000	632,000	442,000
1,1-DCA	µg/L	3,700	43,600	32,000	35,000	27,000	16,800	26,500	87,300	149,000	123,000	63,100	121,000	109,000	86,000	74,600
1,2-DCA	µg/L	5	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	400 U	1,000 U	1,000 U	1,000 U	5,000 U	10,000 U	1,000 U	500 U
Chloroethane	µg/L	-	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	2,760	4,380	4,150	1,410	2,800 J	10,000 U	1,550	1,340
Trichloroethene	µg/L	5	6,210	1,980	720 J	120 J	120 J	1,000 U	2,590	2,250	1,960	2,470	3,820 J	10,000 U	2,890	2,160
cis-1,2-DCE	µg/L	70	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	400 U	1,000 U	1,000 U	1,000 U	5,000 U	10,000 U	1,000 U	500 U
trans-1,2-DCE	µg/L	100	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	400 U	1,000 U	1,000 U	1,000 U	5,000 U	10,000 U	1,000 U	--
1,1-DCE	µg/L	7	128,000	40,600	42,500	26,500	38,200	14,700	57,400	38,200	37,600	55,700	53,100	59,800	62,800	64,200
Vinyl Chloride	µg/L	2	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	400 U	1,000 U	1,000 U	1,000 U	5,000 U	10,000 U	1,000 U	500 U
Tetrachloroethylene	µg/L	5	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	1,000 U	400 U	1,000 U	1,000 U	1,000 U	5,000 U	10,000 U	1,000 U	500 U
Dissolved Hydrocarbon Gases																
Methane	µg/L	-	1.17 U	3.29 U	33.1	126	18.1	113	13.2	15	31	20.9	12.5	19.3	14.3	NS
Ethane	µg/L	-	1.05 U	16.1 U	15.2	17.8	13.1	15.8	572	699 E	702	246	290	192	150	NS
Ethene	µg/L	-	1.06 U	14.9 U	8.1	9.2	8.2	4.4	51.3	59.1	62.8	16.7	15.8	14.3	12.1	NS
General Chemistry																
Chloride	mg/L	-	420	550	580	515	480	435	817	213	235	797	943	643	1100	680
Nitrate-N	mg/L	-	51	34	28	16	22	14	8.44	21.4	19.3	15	14.9	10.1	21.2	6.09
Sulfate	mg/L	-	115	110	118	132	108	134	83.5	3.14	2.99	146	156	151	174	229
Alkalinity	mg/L	-	127	134	128	122	113	142	185	270	265	322	191	167	165	199
Total Organic Carbon																
Total Organic Carbon	mg/L	-	7.8	180	175	173	151	164	153	194	NS	173	162	185	218	161
Metals																
Iron	mg/L	-	43	46	42	38	38	26	155	302	288	213	295	443	192	225
Parameters																
ORP	mV	-	180.6	88.7	-11.2	-12.4	-11.2	-12.4	-8.2	-7.2	-8.74	24.1	80.3	77.5	82.2	37
pH	units	-	5.78	6.53	6.02	6.87	6.12	6.89	6.82	7.62	7.67	5.66	4.81	5.1	5.48	4.76
Dissolved Oxygen	mg/L	-	0.64	0.32	0.23	0.29	0.2	0.27	0.20	0.21	0.25	0.56	2.95	9.25	6.43	1.23
Specific Conductance	µS/cm	-	1,281	1,991	1,168	1,849	1,248	1,767	1,248	1,251	1,220	2,155	98,352	2,344	2,341	1,998
Temperature	Celsius	-	15.13	14.46	14.89	14.83	15.45	14.85	15.48	15.98	14.6	13.8	16.32	14.9	20.01	18.79

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Injection Area Wells																		
			TMW-5																		
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13 ¹	7/14 ¹	2/15 ²	6/15	6/16	12/16	7/17	10/17	6/18	10/18
CVOCs																					
1,1,1-TCA	µg/L	200	47,300	47.9	25.1	1.34	11.1	1.1 U	149	73.4	66.9	197	500 U	500 U	15.4 J	177	29.1 J	157	62.2	20.3	400 U
1,1-DCA	µg/L	3,700	2,120	1,050	980	525	540	213	383	281	253	611	979	500 U	200	845	539	1,790	1,100	516	2,540
1,2-DCA	µg/L	5	100 U	1.32	1.1 U	1.1 U	1.1 U	1.1 U	10 U	25 U	25 U	25 U	500 U	500 U	25 U	25 U	50 U	50 U	15.2 J	19.2	400 U
Chloroethane	µg/L	-	100 U	158	211	318	189	245	9,320 E	116,000 E	10,800	12,100	14,200	4,830	17,900	15,000	27,300	26,400	32,900	88,100	52,500
Trichloroethene	µg/L	5	334	3.71	1.02	1.1 U	0.89 J	1.1 U	10 U	25 U	25 U	25 U	500 U	500 U	25 U	25 U	50 U	50 U	50 U	4.00 U	400 U
cis-1,2-DCE	µg/L	70	100 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	10 U	25 U	25 U	25 U	500 U	500 U	25 U	25 U	50 U	50 U	50 U	4.00 U	400 U
trans-1,2-DCE	µg/L	100	100 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	10 U	25 U	25 U	25 U	500 U	500 U	25 U	--	--	--	--	--	--
1,1-DCE	µg/L	7	15,100	132	141	98.3	54	68.5	51.1	40	38.1	255 J	388 J	500 U	25 U	170	50 U	234	25.7 J	13.2	400 U
Vinyl Chloride	µg/L	2	100 U	88.2	92.1	68.1	68.3	54.4	50.1	61.5	58.1	82.8	500 U	500 U	84.1	313	128	660	1,320	167	8,030
Tetrachloroethylene	µg/L	5	44.4 J	0.76 J	1.1 U	1.1 U	1.1 U	1.1 U	10 U	25 U	25 U	25 U	500 U	500 U	25 U	25 U	50 U	50 U	50 U	2.50 J	400 U
Dissolved Hydrocarbon Gases																					
Methane	µg/L	-	52.1	389	285	187	243	124	NS	2,300	1,800	1,640	1,190	2,850	1,350	NS	762	2,920	2,460	3,800	1,700
Ethane	µg/L	-	1.11	2.31	2.81	1.65	2.18	1.73	1.46	1.44 J	1.25 J	1.09	1.21	1.17 J	0.75	NS	0.8	3.07	2.83	6.6	4.5
Ethene	µg/L	-	0.87	4.27	3.78	2.91	2.68	2.54	233	302	302	234	354	310	184	NS	144	717	615	1,200	770
General Chemistry																					
Chloride	mg/L	-	18	25	23	21	21	18	9.13	92.4	87.1	111	108	50.1	88 J	141	193	108	218	213	266
Nitrate-N	mg/L	-	69	5 U	5 U	5 U	5 U	5 U	NS	0.020 J	0.02 U	0.007 U	0.1 U	5.1	0.0154 J	0.086 J	0.1 U	0.1 U	0.18	0.250 U	0.250 U
Sulfate	mg/L	-	10 U	10 U	10 U	10 U	10 U	10 U	NS	0.31	0.29	1.03	0.396	0.1 U	0.597	0.09 U	2.23	0.78	0.15 J	1.00 U	1.00 U
Alkalinity	mg/L	-	3.4	3.2	1.8	1.6	1.6	1.2	2,040	1,840	1,760	1,680	1,980	640	794	1,480	1,090	1,130	1,270	766	761
Total Organic Carbon																					
Total Organic Carbon	mg/L	-	1.4	2.2	2.1	2	1.8	2	1.21	NS	NS	637	444	160	471	553	384	NS	NS	NS	NS
Metals																					
Iron	mg/L	-	27	37	35	26	34	21	94.2	41.1	38.8	60.7	29.3	34.9	57.7	74.7	77.9	NS	NS	NS	NS
Parameters																					
ORP	mV	-	10.3	-43.6	-21.3	-75.8	-19.3	-96.8	-17.6	-14.6	-14.77	26.6	-71.4	22.5	-42.1	2.44	-69.4	-52.4	-44	4.1	-390
pH	units	-	6.31	6.78	6.14	6.68	6.13	6.66	6.83	7.63	7.72	6.43	5.93	6.7	6.6	5.23	5.91	6.14	6.18	6.24	6.11
Dissolved Oxygen	mg/L	-	0.89	0.74	0.21	0.55	0.17	0.44	0.16	0.13	0.17	0.72	0.49	0.53	2.31	-17.8	0.28	0.41	0.45	0.41	0.60
Specific Conductance	µS/cm	-	4,538	5,984	4,681	5,318	4,714	5,341	4,715	4,720	4,698	2,174	245,330	678	1,667	1,923	2,510	2,086	2,161	1,844	2,180
Temperature	Celsius	-	15.32	12.78	14.87	14.48	14.96	14.14	15.06	14.76	13.22	13.39	16.82	14.2	20.66	19.87	16.5	19	19.8	17.4	20.0

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Injection Area Wells																		
			E-11																		
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13	7/14 ¹	2/15 ²	6/15	6/16	12/16	7/17	10/17	6/18	10/18
CVOCs																					
1,1,1-TCA	µg/L	200	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.24 J	NS	0.5 U	0.29 J	1.6	6.28	1	0.5	0.74	0.52	3.04	9.39	7.71
1,1-DCA	µg/L	3,700	0.5 U	0.24 J	0.5 U	0.5 U	0.5 U	0.5 U	0.43 J	NS	0.5 U	0.25 J	0.55	0.53	1.43	0.81	0.19 J	0.41 J	0.96	2.86	2.47
1,2-DCA	µg/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Chloroethane	µg/L	-	2.93	4.77	6.81	7.21	6.91	2.18	0.2 U	NS	0.5 U	0.66	0.54	0.5 U	3.41	0.16 J	0.5 U	0.5 U	0.5 U	10.0 U	5.00 U
Trichloroethylene	µg/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
cis-1,2-DCE	µg/L	70	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
trans-1,2-DCE	µg/L	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--	--	--	--	--
1,1-DCE	µg/L	7	0.5 U	0.23 J	0.44 J	0.52	0.5 U	0.5 U	0.2 U	NS	0.5 U	0.28 J	0.65	0.56	1.87	1.25	0.5 U	0.62	4.92	13.0	15.3
Vinyl Chloride	µg/L	2	0.11 J	0.38 J	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.46 J	0.5 U	0.5 U	0.5 U	0.16 J	0.530	0.730
Tetrachloroethylene	µg/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Dissolved Hydrocarbon Gases																					
Methane	µg/L	-	1,580	5,780	4,120	3,815	3,890	2,754	2,700	NS	0.58	6,800	419	303	572 J	NS	0.73	237	665	1,200	1,400
Ethane	µg/L	-	1.07 U	1.09 U	0.55 J	0.43 J	0.53 J	0.68 J	0.074 U	NS	1.09	1.32 J	0.605 U	0.0551 J	0.256 J	NS	0.26 U	0.34 U	0.37 U	1.00 U	1.00 U
Ethene	µg/L	-	1.05 U	1.08 U	1.08 U	1.08 U	1.08 u	1.08 U	0.074 U	NS	1.08	2.35 U	0.627 U	0.061 J	0.191 J	NS	0.28 U	0.34 U	0.24 J	1.00 U	1.00 U
General Chemistry																					
Chloride	mg/L	-	9.8	15	14	13	13	12	9.4	NS	8.65	53.3	42.8	13.6	17.6	12.4	5.45	9.69	12.8	52.3	58.8
Nitrate-N	mg/L	-	5 U	5 U	5 U	5 U	5 U	5 U	0.24	NS	2.6	16.7	0.1 U	0.0306 J	0.0041 J	0.085 J	2.17	0.33	0.1 U	6.93	0.250 U
Sulfate	mg/L	-	10 U	10 U	10 U	10 U	10 U	10 U	5.8	NS	5.02	50.6	8.03	30.8	30.8	31.6	11.8	11.9	7.86	20.1	31.0
Alkalinity	mg/L	-	567	878	652	632	632	532	347	NS	318	180	417	165	261	495	99.4	79.3	141	86.0	157
Total Organic Carbon																					
Total Organic Carbon	mg/L	-	1.6	85	79	77	72	55	11.1	NS	8.22	4.25	7.34	4.43	5.9	3.61	12.4	NS	NS	NS	NS
Metals																					
Iron	mg/L	-	19	23	21	18	20	15	29.6	NS	26.3	3.42	6.42	3.49	4.96	0.742	54.7	NS	NS	NS	NS
Parameters																					
ORP	mV	-	-18.2	-121.2	-21.3	-135	-18.3	-175	-14.4	-16.4	-18.23	-33.6	-84.6	-118.1	-78.5	-29.9	6.4	132.7	35.6	139.2	88.8
pH	units	-	6.89	6.75	6.21	6.66	6.19	6.56	6.89	6.79	6.81	6.17	7.7	6.69	7.16	6.92	6.83	6.44	6.86	6.66	6.73
Dissolved Oxygen	mg/L	-	0.42	0.25	0.34	0.22	0.33	0.21	0.3	0.22	0.29	0.34	4.6	1.22	0.5	4.53	0.99	0.36	1.44	3.12	2.03
Specific Conductance	µS/cm	-	843	1,777	1,421	1,682	1,407	1,702	1,395	1,386	1,345	696	1,563	459.4	621	432	237	227	378	415	577
Temperature	Celsius	-	14.78	13.69	14.56	14.23	14.61	14.3	14.51	14.61	12.94	12.01	26.64	14.3	19.14	20.36	15.2	16.9	20.4	17.5	21.2

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Injection Area Well																		
			PW-13																		
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13 ¹	7/14	2/15 ²	6/15	6/16	12/16	7/17	10/17	5/18	10/18
CVOCs																					
1,1,1-TCA	µg/L	200	417	175	152	15.6	56	8.77	10.4	9.98	9.77	154	197	113	139	13.5	38.2	24.2	41.7	92.4	68.5
1,1-DCA	µg/L	3,700	3,310	1,710	1,310	1,524	789	1,125	117 U	112	105	1,280	2,400	1,970	3,030	308	1,010	568	715	2,670	1,710
1,2-DCA	µg/L	5	1.95 J	0.8 J	0.77 J	2.5 U	2.5 U	2.5 U	0.2 U	0.5 U	0.5 U	1.11 J	25 U	25 U	1.8 J	0.5 U	0.78	0.24 J	0.45 J	20.0 U	8.00 U
Chloroethane	µg/L	-	5.72	3.25	18.1	56.4	9.8	49.3	0.2 U	0.5 U	0.5 U	2.5 U	25 U	25 U	5 U	0.5 U	0.81	0.5 U	1.1 U	500 U	100 U
Trichloroethene	µg/L	5	19.5	7.27	10.1	2.5 U	1.2 J	2.5 U	1.27	1.21	1.03	9	16.2 J	13.6 J	15.7	2.19	4.98	3.82	5.3	13.8 J	10.1
cis-1,2-DCE	µg/L	70	5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	0.2 U	0.5 U	0.5 U	2.5 U	25 U	25 U	5 U	0.29 J	0.5	0.5 U	1.1 U	20.0 U	8.00 U
trans-1,2-DCE	µg/L	100	5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	0.2 U	0.5 U	0.5 U	2.5 U	25 U	25 U	5 U	--	--	--	--	--	--
1,1-DCE	µg/L	7	849	432	352	263	189	135	50.7	48.6	46.2	327	520	390	545	95.6	177	157	201	525	379
Vinyl Chloride	µg/L	2	4.62 J	2.73	2.43 J	2.13 J	2.5 U	2.5 U	2.23	2.15	1.98	2.5 U	25 U	25 U	5 U	1.53	0.59	0.93	1.06 J	20.0 U	8.00 U
Tetrachloroethylene	µg/L	5	3.5 J	1.35 J	2.1 J	2.5 U	2.5 U	2.5 U	0.33 J	0.5 U	0.5 U	1.87 J	25 U	25 U	3.16 J	0.54	1.1	0.91	1.21	20.0 U	8.00 U
Dissolved Hydrocarbon Gases																					
Methane	µg/L	-	0.73	1.15	8.77	150	9.12	143	469	501	499	4.1	6.96	0.649	3.81	NS	20	313	150	55	74
Ethane	µg/L	-	1.16 U	1.17 U	0.65 J	0.87 J	0.71 J	0.66 J	0.22 J	0.23 J	0.31 J	0.366 U	0.12 J	0.328 U	0.372 U	NS	0.28 U	0.3 J	0.13 J	1.0 U	1.00 U
Ethene	µg/L	-	1.14 U	1.15 U	0.1 J	0.31 J	0.13 J	0.23 J	0.049 U	0.022	0.07 J	0.401 U	0.0701 J	0.365 U	0.407 U	NS	0.29 U	0.35 U	0.37 U	1.0 U	1.00 U
General Chemistry																					
Chloride	mg/L	-	60	62	58	63	51	58	8.42	8.22	8.01	27.4	34.9	30.4	44.4	8.85	17.8	12.8	15.6	36.9	22.9
Nitrate-N	mg/L	-	160	33	29	27	22	22	1.44	1.02	0.99	39.3	60.5	45.8	57.7	0.85	9.53	3.39	5.67	20.00	6.28
Sulfate	mg/L	-	49	50	42	35	38	31	4.64	4.23	4.29	79.8	116	101	134	11.3	63.1	27.1	45.5	157	131
Alkalinity	mg/L	-	65	101	98	78	73	67	116	112	102	71.6	68.8	62.1	65.6	131	87.4	96.2	106	86.0	104
Total Organic Carbon																					
Total Organic Carbon	mg/L	-	5 U	5 U	5.8	5.7	4.1	4.3	4.91	4.22	4.23	2.78	2.69	2.38	3	5.23	4.06	NS	NS	NS	NS
Metals																					
Iron	mg/L	-	0.23	0.18	0.22	0.21	0.17	0.15	1.4 J	1380 J	1.16	0.295	0.418	0.235	0.378	2.73	1.88	NS	NS	NS	NS
Parameters																					
ORP	mV	-	123.8	185.6	22.1	135.5	21.1	123.5	25.8	30.8	30.38	144.2	96.6	-36.3	164.4	40.1	79.1	140.2	146.6	104.0	182.1
pH	units	-	6.64	6.32	6.72	6.53	6.68	6.62	6.88	7.28	7.3	6.13	5.79	5.75	6.08	6.44	6.28	6.26	6.32	6.11	6.31
Dissolved Oxygen	mg/L	-	0.38	0.31	0.11	0.27	0.09	0.25	0.14	0.22	0.3	0.3	0.28	2.39	0.31	0.75	0.1	0.35	0.5	0.21	0.26
Specific Conductance	µS/cm	-	213	877	181	813	108	770	93	88	82	67.2	19,257	937	1,105	316	515	348	479	776	498
Temperature	Celsius	-	14.57	15.2	13.98	14.81	13.67	14.75	13.73	14.03	12.76	13.93	16.71	14.4	17.54	18.46	15.7	6.8	19.6	15.1	19.2

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Perimeter Well																		
			FW-6																		
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13	7/14	2/15 ²	6/15	6/16	12/16	7/17	10/17	5/18	10/18
CVOCs																					
1,1,1-TCA	µg/L	200	16.9	11.2	8.17	3.18	6.25	1.11	0.2 U	0.98	0.49 J	0.5 U	1.61	2.15	39	0.74	2.01	0.5 U	1.49	0.995	0.400 U
1,1-DCA	µg/L	3,700	4.26	4.59	4.82	6.13	3.1	4.18	0.73	3.78	2.55	0.31 J	0.35 J	0.21 J	76.4	0.37 J	0.47 J	0.96	0.98	0.685	1.12
1,2-DCA	µg/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Chloroethane	µg/L	-	0.97	2.67	3.12	4.21	2.89	2.31	0.2 U	1.89	1.79	0.5 U	0.5 U	0.5 U	0.76	0.5 U	0.5 U	0.5 U	0.5 U	5.00 U	5.00 U
Trichloroethene	µg/L	5	0.6	0.5	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.99	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
cis-1,2-DCE	µg/L	70	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2.18	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
trans-1,2-DCE	µg/L	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--	--	--	--	--	--
1,1-DCE	µg/L	7	0.5 U	0.12 J	0.22 J	0.5 U	0.18 J	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	3.38	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Vinyl Chloride	µg/L	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Tetrachloroethylene	µg/L	5	1.01	0.97	0.44 J	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.68	0.5 U	0.21 J	0.5 U	0.16 J	0.400 U	0.400 U
Dissolved Hydrocarbon Gases																					
Methane	µg/L	-	5.13 U	14.4 U	14.4 U	0.73 U	14.4 U	0.73 U	0.071 J	0.73 U	0.73 U	0.096 J	0.0492 J	0.0819 J	6.62	NS	0.0658 J	NS	NS	NS	NS
Ethane	µg/L	-	1.21 U	1.38 U	1.38 U	1.38 U	1.25 U	1.38 U	0.066 U	1.38 U	1.38 U	0.364 U	0.367 U	0.351 U	0.355 U	NS	0.22 U	NS	NS	NS	NS
Ethene	µg/L	-	1.18 U	1.35 U	1.35 U	1.35 U	1.23 U	1.35 U	0.067 U	1.35 U	1.35 U	0.399 U	0.402 U	0.387 U	0.391 U	NS	0.236 U	NS	NS	NS	NS
General Chemistry																					
Chloride	mg/L	-	15	20	18	17	19	16	17.1	14	12	17.9	18	3	14	14.5	16	16.5	15	10.5	14.4
Nitrate-N	mg/L	-	5	5 U	5 U	5 U	5 U	5 U	1.81	5 U	5 U	1.83	1.48	1.59	0.895 J	1.31	1.16	0.12	0.58	0.250 U	0.250 U
Sulfate	mg/L	-	10 U	10	9	10	8.7	9	9.17	NS	5.6	13.9	14.4	2.79	11.1	12.2	11.4	19.7	14.4	14.6	18.7
Alkalinity	mg/L	-	276	436	402	390	401	278	336	251	249	24.3	279	235	5.2	311	276	248	227	167	209
Total Organic Carbon																					
Total Organic Carbon	mg/L	-	3.2	11	10	9.5	9	7.8	9.1	5.1	4.9	7.07	7.06	6.74	1.22	6.63	5.78	NS	NS	NS	NS
Metals																					
Iron	mg/L	-	0.14	0.16	0.15	0.16	0.14	0.13	0.0645 J	NS	0.09	0.092 J	0.214	0.198	0.183	0.0881 J	0.28	NS	NS	NS	NS
Parameters																					
ORP	mV	-	40.2	36	23.5	22.1	22.5	18.1	25.1	34.1	34.07	128.8	70.7	95.4	111.9	42.3	88.8	139	137.1	97.8	129.2
pH	units	-	7	7.01	6.59	6.99	6.62	7.05	7.12	6.12	6.21	7.03	6.84	7.29	6.22	6.28	6.68	6.93	6.6	6.71	6.65
Dissolved Oxygen	mg/L	-	0.78	3.54	0.35	2.15	0.32	1.33	0.27	0.23	0.29	3.7	1.08	5.38	0.33	3.91	1.3	4.07	1.35	6.29	5.05
Specific Conductance	µS/cm	-	342	823	251	813	180	852	193	194	213	600	11,763	468.9	107	625	648	557	510	334	382.7
Temperature	Celsius	-	15.12	15.96	14.84	15.46	14.95	16.03	14.87	14.97	13.55	14.74	14.87	15.4	18.17	15.69	15.5	16	16.7	15.3	16.6

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Perimeter Well																		
			PW-10																		
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13	7/14	2/15 ²	6/15	5/16	12/16	7/17	10/17	5/18	10/18
CVOCs																					
1,1,1-TCA	µg/L	200	16.1	16.6	1.23	0.13 J	0.68	0.5 U	0.55	0.5 U	0.5 U	41.9	51.4	25.6	39.1	25.6	15.3	23.8	33.2	24.1	15.5
1,1-DCA	µg/L	3,700	58.8	31.8	28.6	35.1	23.9	22.2	18.1	15.6	14.9	67.5	81.3	60.9	77.5	26.7	24.9	37.3	50.7	27.7	31.5
1,2-DCA	µg/L	5	0.15 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Chloroethane	µg/L	-	6.07	3.55	6.82	7.25	7.21	4.17	5.14	2.54	2.33	0.82	1.67	0.5 U	0.78	0.5 U	0.29 J	1.29	0.5	5.00 U	5.00 U
Trichloroethylene	µg/L	5	2.07	1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.55	1.63	1.89	2.04	1.04	0.97	1.14	1.38	1.14	1.38
cis-1,2-DCE	µg/L	70	1.68	1.67	1.52	0.75	1.1	0.66	0.8	0.57	0.51	2.46	5.49	2.47	2.38	0.98	1.02	1.94	1.87	1.18	1.44
trans-1,2-DCE	µg/L	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--	--	--	--	--	--
1,1-DCE	µg/L	7	1.91	1.17	2.55	3.51	1.45	1.38	0.79	0.58	0.49 J	4.73	6.06	2.72	3.76	2.3	2.41	2.79	2.92	1.98	2.25
Vinyl Chloride	µg/L	2	0.13 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Tetrachloroethylene	µg/L	5	0.52	0.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.79	1.91	0.79	1.75	1.2	0.74	1.16	1.2	1.14	1.06
Dissolved Hydrocarbon Gases																					
Methane	µg/L	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Ethane	µg/L	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Ethene	µg/L	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
General Chemistry																					
Chloride	mg/L	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.73	NS	NS	NS	NS	NS
Nitrate-N	mg/L	-	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.489	0.205	0.126	0.926	0.36 U	0.507	0.25	0.38	0.442	0.250 U
Sulfate	mg/L	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.22	NS	NS	NS	NS	NS
Alkalinity	mg/L	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	16.9	NS	NS	NS	NS	22.7
Total Organic Carbon																					
Total Organic Carbon	mg/L	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1.13	NS	NS	NS	NS	NS
Metals																					
Iron	mg/L	-	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.0732 J	NS	NS	NS	NS	NS
Parameters																					
ORP	mV	-	46.5	83.6	21.2	78.2	27.2	85.2	32	25	22.99	198.8	101.8	56	292.3	139.8	109.8	141.9	150.2	133.3	72.9
pH	units	-	5.85	5.82	6.23	6.35	6.3	6.31	6.4	6.7	6.73	4.92	5.01	6.13	6.13	5.25	5.12	5.55	5.61	4.47	5.70
Dissolved Oxygen	mg/L	-	0.35	1.39	0.28	1.25	0.27	1.21	0.27	0.32	0.4	1.22	0.48	9.83	0.94	0.55	0.09	6.63	0.89	1.08	0.23
Specific Conductance	µS/cm	-	154	126	128	108	167	144	153	163	203	128	209	122.5	137	97	137	113	128	112	137
Temperature	Celsius	-	15.33	15.43	14.98	15.15	14.9	15.55	14.94	14.74	13.57	14.63	17.64	13.8	17.7	15.57	15.5	16.9	20.7	13.9	20.1

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Perimeter Well																		
			PW-11																		
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13	7/14	2/15 ²	6/15	6/16	12/16	7/17	10/17	5/18	10/18
CVOCs																					
1,1,1-TCA	µg/L	200	16.5	21.1	15.2	4.61	3.1	1.65	13.9	11.5	10.2	254	176	43.5	85.4	131	11.3	11	66.1	9.78	8.03
1,1-DCA	µg/L	3,700	3.77	3.79	4.12	8.15	2.68	3.12	31.6	29.6	24.8	80.8	52.9	16.3	31.8	86.3	5.57	10.3	26.1	4.09	7.87
1,2-DCA	µg/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.94	0.86	0.79	2.04	5 U	0.5 U	0.19 J	0.36 J	0.5 U	0.5 U	0.21 J	0.400 U	0.400 U
Chloroethane	µg/L	-	0.35 J	0.34 J	1.23	2.54	2.13	1.85	11.4	10.3	9.24	26	4.07 J	0.7	0.21 J	22	0.17 J	0.28 J	1.74	10.0 U	5.00 U
Trichloroethene	µg/L	5	3.86	0.23 J	0.5 U	0.5 U	0.5 U	0.5 U	3.38	2.31	1.02	22.6	4.78	2.08	2.44	3.5	0.96	0.8	4.73	0.320 J	0.630
cis-1,2-DCE	µg/L	70	4.91	0.28 J	0.5 U	0.5 U	0.5 U	0.5 U	8.43	7.55	7.31	109	5.41	2.58	1.61	2.7	1.32	1.55	12.3	0.370 J	0.720
trans-1,2-DCE	µg/L	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	--	--	--	--	--	--	--
1,1-DCE	µg/L	7	11.5	1.05	2.11	1.15	1.64	0.73	13.1	12.99	10.84	267	204	34.4	131	214	4.66	11.3	28.6	7.92	21.6
Vinyl Chloride	µg/L	2	0.43 J	0.5 U	4.75	4.61	4.19	19.4	2.54 J	0.5 U	1.66	3.93	0.5 U	0.34 J	0.48 J	0.400 U	0.210 J				
Tetrachloroethylene	µg/L	5	0.96	0.33 J	0.5 U	0.5 U	0.5 U	0.5 U	0.98	0.77	0.67	5.55	5 U	1.32	0.94	0.88	0.55	0.66	1.97	0.392 J	0.430
Dissolved Hydrocarbon Gases																					
Methane	µg/L	-	0.63 U	0.63 U	0.63 U	0.63 U	0.63 U	0.63 U	26.4	23.1	21.5	34.9	15.9	0.245 J	37	NS	0.28	NS	NS	NS	NS
Ethane	µg/L	-	1.19 U	1.18 U	1.82	1.52	1.72	1.33	2.46	2.98	2.88	1.21	0.0778 J	0.293 U	0.0627 J	NS	0.26 U	NS	NS	NS	NS
Ethene	µg/L	-	1.15 U	1.13 U	1.33	1.18	1.41	1.21	0.37 J	0.55	0.43	3.04	0.275 J	0.332 U	0.162 J	NS	0.27 U	NS	NS	NS	NS
General Chemistry																					
Chloride	mg/L	-	10 U	10 U	10 U	10 U	10 U	10 U	9.96	9.77	8.26	18	16.9	9.33	12.7	14.7	12.6	41.3	10.2	14.6	11.5
Nitrate-N	mg/L	-	7	6	5.5	5.2	4.8	5 U	7	6.25	5.69	6.78	4.69	5.43	1.51	3.59	4.52	2	7.08	1.18	1.04
Sulfate	mg/L	-	10 U	12	11	10	8	2	7.65	7.05	6.83	17.5	25.4	12.4	19.2	16.5	4.87	9.51	11.5	11.7	11.9
Alkalinity	mg/L	-	11	13	11	12	10	11	27.9	25.5	230.2	56.2	45.4	38.4	44.2	43.6	22.3	30.9	27.5	28.0	NS
Total Organic Carbon																					
Total Organic Carbon	mg/L	-	5 U	5 U	5 U	5 U	5 U	5 U	2.4	1.9	1.65	1.6	1.7	3.24	1.68	2.05	1.88	NS	NS	NS	NS
Metals																					
Iron	mg/L	-	0.08	0.06	0.07	0.08	0.06	0.05	0.02 J	18 J	0.5 U	0.074 J	0.0398 J	0.0823 J	0.0641 J	0.0174 J	0.0963 J	NS	NS	NS	NS
Parameters																					
ORP	mV	-	92.4	118.1	64.2	98.2	45.2	72.2	46.8	46.8	44.68	148.4	145.5	127.3	167.9	34.7	81.9	118.6	154.2	158.2	153.7
pH	units	-	5.65	5.61	6.23	6.37	6.17	6.32	6.97	7.57	7.64	5.96	5.41	6.0	6.4	5.29	5.81	6.28	5.92	5.86	6.05
Dissolved Oxygen	mg/L	-	0.21	0.47	0.18	0.43	0.17	0.34	0.21	0.22	0.32	0.21	0.2	0.47	0.35	0.4	0.13	0.12	0.58	0.07	0.24
Specific Conductance	µS/cm	-	132	146	128	183	204	218	207	214	170	285	448	161.1	196	229	169	401	186	151	157
Temperature	Celsius	-	14.33	14.56	14.12	14.81	13.65	14.65	13.7	13.3	12.17	14.34	17.81	13.6	18.22	17.94	14	16.9	20.6	14.6	20.2

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Perimeter Well																		
			PW-77A																		
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13	7/14	2/15 ²	6/15	5/16	12/16	7/17	10/17	5/18	10/18
CVOCs																					
1,1,1-TCA	µg/L	200	3.57	4.97	2.15	1.08	1.26	0.53	0.33 J	0.49 J	0.35 J	0.55	5.25	2.05	0.32 J	0.25 J	0.19 J	1.6	0.5 U	0.400 U	0.400 U
1,1-DCA	µg/L	3,700	212	227	216	186	143	142	156	134	126	83	83.8	46.4	70.2	55.5	20.3	36.9	36.5	37.8	40.4
1,2-DCA	µg/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Chloroethane	µg/L	-	14.7	2.05	5.86	6.93	5.72	5.48	5.11	4.81	4.11	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	10.0 U	5.00 U
Trichloroethene	µg/L	5	3.09	2.44	1.98	1.72	1.45	0.69	0.31 J	0.24 J	0.18 J	1.98	1.9	1.96	1.84	1.83	1.12	1.73	1.03	1.42	1.37
cis-1,2-DCE	µg/L	70	1.74	1.85	1.79	1.37	1.39	0.84	0.65	0.77	0.75	2.2	1.86	2.28	2.5	2.38	1.52	2.05	1.4	2.03	1.95
trans-1,2-DCE	µg/L	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--	--	--	--	--	--
1,1-DCE	µg/L	7	30.8	34.4	33.8	26.5	26.4	18.4	16.3	14.8	12.4	18.8	16.3	15.4	18.3	16	9.38	15.7	10	17.7	17.9
Vinyl Chloride	µg/L	2	0.49 J	3.61	3.15	2.86	1.89	1.13	0.41 J	0.72	0.69	1.26	0.5 U	0.37 J	0.2 J	0.6	0.5 U	0.5 U	0.5 U	0.400 U	3.66
Tetrachloroethylene	µg/L	5	0.47 J	0.42 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.27 J	0.26	0.23 J	0.19 J	0.21 J	0.5 U	0.2 J	0.5 U	0.400 U	0.400 U
Dissolved Hydrocarbon Gases																					
Methane	µg/L	-	2.78	3.37	5.68	4.62	6.42	3.84	0.12 J	2.87	2.76	1.91	0.0792 J	0.158 J	0.227 J	NS	0.136	0.22 U	0.19 U	1.0 U	29
Ethane	µg/L	-	1.17 U	1.37 U	2.01	1.89	1.18	1.64	0.049 U	1.34	1.33 J	0.0978 J	0.36 U	0.38 U	0.38 U	NS	0.227 U	0.41 U	0.36 U	1.0 U	1.3
Ethene	µg/L	-	1.15 U	1.34 U	1.34 U	1.67 U	1.34 U	1.67	0.051 U	1.17	1.07 J	0.404 J	0.396 U	0.415 U	0.415 U	NS	0.242 U	0.41 U	0.37 U	1.0 U	1.0 U
General Chemistry																					
Chloride	mg/L	-	640	770	680	550	480	425	511	317	302	583	656	448	536	430	348	334	380	250	261
Nitrate-N	mg/L	-	5 U	5 U	5 U	5 U	5 U	5 U	0.31	5 U	5 U	0.234	0.402	0.274	0.312	0.27 U	0.461 U	0.24	0.34	0.325	0.250 U
Sulfate	mg/L	-	7 U	7 U	7 U	7 U	7 U	7 U	5.89	NS	7 U	6.5	10.9	10	7.98	8.18	8.7	7.93	8.2	9.71	7.16
Alkalinity	mg/L	-	138	157	168	152	142	133	149	111	108	146	140	160	151	176	181	159	133	155	167
Total Organic Carbon																					
Total Organic Carbon	mg/L	-	5 U	5 U	5 U	5 U	5 U	5 U	4.46	5 U	5 U	3.42	6.05	5.82	6.1	7	6.58	NS	NS	NS	
Metals																					
Iron	mg/L	-	0.06	0.07	0.08	0.07	0.07	0.06	2.85	0.05	0.05 U	0.44	0.212	0.0643 J	0.0908 J	0.648	0.0261 J	NS	NS	NS	
Parameters																					
ORP	mV	-	143.2	167.6	128.3	124.5	142.3	116.5	142	146	145.37	92.2	96.2	-46.5	160.2	157.6	82.4	196.8	195.1	114.5	219.3
pH	units	-	6.11	6.09	6.32	6.59	6.23	6.58	6.23	6.83	6.89	5.95	6.05	5.91	6.25	6.28	6.18	6.27	6.71	6.34	6.15
Dissolved Oxygen	mg/L	-	0.42	0.31	0.38	0.29	0.25	0.34	0.26	0.17	0.26	1.32	1.19	0.41	0.6	0.45	0.11	2.12	4.48	2.35	0.30
Specific Conductance	µS/cm	-	1,834	2,634	1,723	2,486	1,793	2,460	1,791	1,789	1,890	2,018	2,006	1,888	1,901	1,711	1,713	1,280	1,368	1,079	1,126
Temperature	Celsius	-	17.24	17.4	16.23	16.48	16.63	16.64	16.67	17.27	16.16	14.16	17.14	15.6	19.99	17.36	15.1	17.1	17.5	17.4	18.6

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Perimeter Well																		
			PW-78A																		
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13	7/14	2/15 ²	6/15	5/16	12/16	7/17	10/17	5/18	10/18
CVOCs																					
1,1,1-TCA	µg/L	200	1.79	10.5	9.55	2.18	4.38	0.67	0.5 U	0.5 U	0.5 U	7.37	17.2	12.5	8.55	8	6.19	10.2	9.69	16.7	10.4
1,1-DCA	µg/L	3,700	141	114	91.1	87.2	73.4	25.8	22.9	18.1	17.2	6.22	62	59.3	65.1	51.2	58	58.8	59.7	58.9	51.0
1,2-DCA	µg/L	5	0.51	0.47 J	0.5 U	0.5 U	0.5 U	0.29 J	0.29 J	0.33 J	0.3 J	0.24 J	0.33 J	0.27 J	0.28 J	0.260 J	0.230 J				
Chloroethane	µg/L	-	0.5 J	1.95	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	5.00 U				
Trichloroethylene	µg/L	5	2.05	1.73	1.94	0.75	0.63	0.55	0.5 U	0.21 J	0.5 U	1.96	2	2.33	2.29	1.96	2.27	2.46	2.15	2.10	2.12
cis-1,2-DCE	µg/L	70	0.56	1.34	1.33	0.76	1.21	0.39 J	0.5 U	0.5 U	0.5 U	1.14	1.05	1.14	1.15	0.99	1.17	1.3	1.12	1.17	1.21
trans-1,2-DCE	µg/L	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--	--	--	--	--
1,1-DCE	µg/L	7	71.3	83.8	68.7	57.6	42.3	46.2	38.2	34.2	31.3	74.7	69	77.3	84.1	66.3	77.2	84	83.5	82.9	79.0
Vinyl Chloride	µg/L	2	0.14 J	0.36 J	0.5 U	0.5 U	0.5 U	0.5 U	0.2 J	0.5 U	0.26 J	0.28 J	0.22 J	0.2 J	0.25 J	0.253 J	0.230 J				
Tetrachloroethylene	µg/L	5	0.68	0.6	0.72	0.5 U	0.44 J	0.5 U	0.5 U	0.5 U	0.5 U	0.65	0.52	0.75	0.75	0.61	0.8	0.8	0.7	0.825	0.720
Dissolved Hydrocarbon Gases																					
Methane	µg/L	-	8.15	21.8	3.15	5.81	2.43	4.31	3.7	3.98	4.01	2.61	0.752	1.13	1.23	NS	2.96	1	2	1.0	7.7
Ethane	µg/L	-	1.11 U	1.15 U	1.32	1.15	1.43	1.14	0.046 U	1.12	1.13 J	0.369 U	0.362 U	0.34 U	0.374 U	NS	0.241 U	0.39 U	0.44 U	1.0 U	1.0 U
Ethene	µg/L	-	1.1 U	1.13 U	1.3	1.16	1.31	1.13	0.048 U	1.11	1.11 J	0.404	0.397 U	0.376 U	0.409 U	NS	0.255 U	0.39 U	0.44 U	1.0 U	1.0 U
General Chemistry																					
Chloride	mg/L	-	55	50	45	42	43	28	48.4	5	4.7	42.8	35.4	35.7	43	30.1	31.2	31.4	31.3	29.5	45.0
Nitrate-N	mg/L	-	5 U	5 U	5 U	5 U	5 U	5 U	0.11	5 U	5 U	0.315	0.411	0.315	0.507	0.46 U	0.319	0.49	0.42	0.561	5.21
Sulfate	mg/L	-	65	62	59	57	52	46	61.8	NS	52.1	63.4	55.3	64.9	52.8	54.1	55.2	53.7	54.1	48.9	45.3
Alkalinity	mg/L	-	125	118	110	98	101	77	133	35	31	107	110	109	105	102	108	101	102	102	90.2
Total Organic Carbon																					
Total Organic Carbon	mg/L	-	5 U	5 U	5 U	5 U	5 U	5 U	0.94	5 U	5 U	0.763	1.1	0.906	1.08	0.91	0.856	NS	NS	NS	NS
Metals																					
Iron	mg/L	-	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.0986 J	0.05 U	0.05 U	0.021 J	0.0351 J	0.1 U	0.0128 J	0.1 U	0.0257 J	NS	NS	NS	NS
Parameters																					
ORP	mV	-	98.2	108.8	143.9	92.4	108.9	65.4	111.5	115.5	114.82	86.9	107.6	-160.3	157	77.1	81.9	222.5	162.9	89.6	205.2
pH	units	-	5.89	5.74	6.42	6.48	6.46	6.42	6.46	5.46	5.54	6.1	6.03	6.1	6.52	6.27	6.27	6.18	6.23	5.88	6.29
Dissolved Oxygen	mg/L	-	0.41	0.45	0.17	0.44	0.15	0.32	0.14	0.23	0.27	0.28	0.23	0.19	0.45	1.06	2.11	0.16	0.32	0.37	0.28
Specific Conductance	µS/cm	-	426	469	491	483	549	577	530	522	504	497	430	451.7	429	430	492	653	406	391	440.6
Temperature	Celsius	-	16.44	16.28	15.62	15.57	15.4	15.09	15.48	15.88	14.36	13.14	16.39	14.9	17.18	16.08	15.2	15	17.3	14.9	16.7

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Perimeter Well																		
			PW-98A																		
			Baseline 7/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	6/13	12/13	7/14 ¹	2/15 ²	6/15	6/16	12/16	7/17	10/17	6/18	10/18
CVOCs																					
1,1,1-TCA	µg/L	200	504	406	507	183	123	128	6.53	37.8	24.2	1.12	26.5	73.2	407	1,000	548	1,270	1,340	894	2,600
1,1-DCA	µg/L	3,700	170	253	458	503	268	384	7.63	39.4	37.1	12	18.8	52.2	111	311	308	621	552	515	1,170
1,2-DCA	µg/L	5	4.74	3.71	3.42	2.48	1.08	1.54	0.2 U	0.34 J	0.5 U	0.37 J	5 U	5 U	1.31	3.06	3.63	4.63	3.44	3.80 J	3.60 J
Chloroethane	µg/L	-	3	3.28	3.6	15.6	9.4	8.18	0.2 U	2.03	1.99	1.07	5 U	5 U	71.1	234	165	371	319	970	1,940
Trichloroethene	µg/L	5	336	150	108	26.3	46.1	18.4	0.2 U	1	0.78	8.1	5 U	5 U	52.1	59.9	27.3	41.1	38.7	32.1	44.6
cis-1,2-DCE	µg/L	70	32.9	77.5	25.9	18.2	12.1	14.5	0.2 U	0.27 J	0.5 U	6.31	5 U	5 U	11.9	24.9	40.3	58.6	39.1	52.2	19.4
trans-1,2-DCE	µg/L	100	0.5 U	1.1 U	1.1 U	1.1 U	1.1 U	0.2 U	0.5 U	0.5 U	0.5 U	5 U	5 U	0.5 U	--	--	--	--	--	--	--
1,1-DCE	µg/L	7	1,080	1,070	495	427	125	245	31.8	134 E	126	28.3	110	203	651	1,110	588	1,390	1,340	1,120	2,830
Vinyl Chloride	µg/L	2	8.86	131	95.2	78.2	25.3	34.4	0.23 J	0.6	0.54	2.56	5 U	5 U	13	52.1	64.1	109	114	110	196
Tetrachloroethylene	µg/L	5	16.3	8.46	6.84	3.59	3.11	1.57	0.2 U	0.25 J	0.5 U	0.8	5 U	5 U	2.66	4.51	2.08	5.82	7.37	4.70	14.2
Dissolved Hydrocarbon Gases																					
Methane	µg/L	-	16.4	14.8	429	512	418	412	1.23	0.92	0.99	378	2.06	0.956	840	NS	2,000	3,090	NS	NS	NS
Ethane	µg/L	-	1.2	0.84 J	0.81 J	10.3	0.78 J	8.1	0.65 U	0.04 J	0.03 J	0.664	0.0788 J	0.364 U	1.08 J	NS	14.7	31.2	NS	NS	NS
Ethene	µg/L	-	0.88	1.48	74.1	52.2	61.4	3.15	0.67 U	0.08 J	0.07 J	0.108 J	0.658 U	0.399 U	0.409 J	NS	1.68	10.9	NS	NS	NS
General Chemistry																					
Chloride	mg/L	-	28.6	30	22.2	18.6	21.5	17	20.8	16.5	14.3	6.5	18.6	19.3	26.5	34	34.9	48.7	46.5	39.6	55.7
Nitrate-N	mg/L	-	8.76	5 U	7.5	6.9	2.4	2.4	2.65	13.3	11.9	0.0007 U	1.16	5.41	21.7	24.3 J	9.29	13.9	10.6	8.10	18.3
Sulfate	mg/L	-	17.6	11	18.2	17.3	16.1	15.4	11.1	34.6	32.5	3.99	11.1	29.5	15	25.3	17.1	32	47.7	20.5	94.4
Alkalinity	mg/L	-	125	317	111	108	108	84.1	74.3	137	126	78.6	87.4	85	268	293	334	291	200	239	135
Total Organic Carbon																					
Total Organic Carbon	mg/L	-	2.4	5 U	2.3 J	2.2 J	1.8 J	1.8 J	2.73	3.19	2.86	0.584	2.6	3.14	2.34	2.35	2.24	NS	NS	NS	NS
Metals																					
Iron	mg/L	-	0.697	0.17	0.42	0.38	0.38	0.18	4.26	19.1	189	0.054 J	0.554	1.24	0.129	0.433	0.253	NS	NS	NS	NS
Parameters																					
ORP	mV	-	-265.1	126	75.7	98.2	87.7	117.2	89.6	94.6	94.23	60.5	63	209.6	160.4	37.1	144.2	94.2	84.5	20.5	168.9
pH	units	-	6.69	6.47	4.86	6.84	4.87	6.74	5.17	5.77	5.82	6.65	6.96	6.27	6.51	5.46	6.54	6.38	6.39	6.59	6.08
Dissolved Oxygen	mg/L	-	0.28	0.16	0.42	0.15	0.14	0.11	0.16	0.15	0.22	0.29	0.29	2.13	0.3	0.4	5.1	0.16	0.57	0.09	0.13
Specific Conductance	µS/cm	-	497	763	808	758	785	703	796	797	760	240	5144	297	847	921	926	828	746	685	795
Temperature	Celsius	-	18.15	19.6	17.59	17.54	17.92	17.82	17.97	17.97	16.69	21.71	16.38	14.32	19.84	19.2	20.6	18.7	21.6	19.4	20.57

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Perimeter Well																		
			PW-99A																		
			Baseline 6/09	12/09	5/10	12/10	5/11	11/11	6/12	12/12	5/13	12/13 ¹	7/14	2/15 ²	6/15	6/16	12/16	7/17	10/17	5/18	10/18
CVOCs																					
1,1,1-TCA	µg/L	200	27.5	54.6	22.1	7.15	8.94	5.18	24	19.3	11.2	43.5	131	43	26.7	38.3	157	86.9	74.9	70.6	54.7
1,1-DCA	µg/L	3,700	28.5	60.6	58.3	23.9	41.5	14.8	56.6	52.3	49.1	37.3	54.8	46.9	15.9	32.5	120 E	34.9	58.2	68.2	76.2
1,2-DCA	µg/L	5	0.18 J	0.31 J	0.5 U	0.5 U	0.5 U	0.5 U	1.28	1.01	0.98	0.26 J	5 U	5 U	0.5 U	0.15 J	0.89	0.5 U	0.98	0.258 J	4.00 U
Chloroethane	µg/L	-	1.52	1.78	5.86	8.12	6.18	7.83	74.4	69.6	71.3	1.16	5 U	17.9	1.18	1.94	8.34	2.64	9.95	10.0 U	50.0 U
Trichloroethene	µg/L	5	0.77	1.04	0.23 J	0.5 U	0.5 U	0.5 U	50.5	49.6	41.3	1.08	72.6	46.7	0.52	0.82	3.65	1.3	5.58	1.93	2.60 J
cis-1,2-DCE	µg/L	70	0.19 J	0.36 J	0.5 U	0.5 U	0.5 U	0.5 U	18.1	16.5	13.2	0.28 J	13.8	17.8	0.5 U	0.19 J	0.82	0.21 J	1.06	0.320 J	4.00 U
trans-1,2-DCE	µg/L	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	5 U	5 U	0.5 U	--	--	--	--	--	--
1,1-DCE	µg/L	7	87.8	245	232	186	155	143	135 E	123	125	143	303	145	110	132	365 E	375	262	773	516
Vinyl Chloride	µg/L	2	0.32 J	1.53	4.23	5.33	2.48	2.84	12.3	11.1	9.82	0.45 J	5.63	10.9	0.42 J	0.72	1.78	2.11	2.93	2.02	2.40 J
Tetrachloroethylene	µg/L	5	0.21 J	0.37 J	0.5 U	0.5 U	0.5 U	0.5 U	3.68	3.55	2.78	0.31 J	1.83	5 U	0.18 J	0.26 J	1.05	0.54	1.97	0.786	4.00 U
Dissolved Hydrocarbon Gases																					
Methane	µg/L	-	11.2	6.77	8.21	6.23	8.32	5.18	827	675	585	1.93	791	1,010	6	NS	3.89	NS	NS	NS	NS
Ethane	µg/L	-	0.76 J	0.49 J	0.49 J	0.88	0.89	0.12	1	1.03	1.01	0.105 J	0.485 J	0.903	0.0427 J	NS	0.22 U	NS	NS	NS	NS
Ethene	µg/L	-	0.65 J	1.2 U	0.88	1.23	0.87	2.54	0.21 J	0.23 J	0.25 J	0.395 U	0.218 J	0.154 J	0.377 U	NS	0.073 J	NS	NS	NS	NS
General Chemistry																					
Chloride	mg/L	-	26.7	17	15	14	14	12	16.3	14.2	13.9	20.8	22.8	19.6	10.8	17.6	24.5	25.1	22.7	21.3	19.6
Nitrate-N	mg/L	-	2.31	5 U	5 U	5 U	5 U	5 U	0.97	0.96	0.94	5.9	13.2	6.66	0.34	2.57	6.38	1.51	1.33	1.10	0.250 U
Sulfate	mg/L	-	16.8	16	15	14	14	11	8.22	8.11	7.99	21.3	8.29	9.39	10.1	16.1	35.1	16.4	20.5	12.8	9.63
Alkalinity	mg/L	-	67.5	81	78	65	61	55	NS	266	254	118	180	329	91.8	88.8	111	85.1	96.9	84.0	NS
Total Organic Carbon																					
Total Organic Carbon	mg/L	-	3.11	5 U	6.23	6.18	5.86	5.81	2.01	1.11	1.08	2.74	1.62	2.24	3.61	2.33	2.91	NS	NS	NS	NS
Metals																					
Iron	mg/L	-	9.77	0.57	0.61	0.58	0.58	0.45	0.0113 J	9.8 J	8.8	9.8	0.188	0.14	2.04	0.403	8.08	NS	NS	NS	NS
Parameters																					
ORP	mV	-	22.7	138.4	23.1	85.4	29.1	67.4	33.6	25.6	25.1	67	36.2	211.2	165.2	54.7	Dry	163.3	124.9	108.6	139.9
pH	units	-	6.16	6.63	6.82	6.48	6.8	6.55	7.8	7.7	7.79	5.81	6.17	6.4	6.49	5.32	Dry	6.47	6.34	6.30	6.27
Dissolved Oxygen	mg/L	-	4.25	0.57	0.31	0.44	0.23	0.21	0.23	0.24	0.32	0.63	0.19	0.84	1.96	0.63	Dry	0.31	1.16	0.90	0.50
Specific Conductance	µS/cm	-	378	270	512	248	444	262	461	453	468	385	875	790	304	296	Dry	555	331	302	315
Temperature	Celsius	-	15.96	14.48	14.25	14.95	14.03	15.5	13.98	14.98	13.84	11.84	19.01	18.35	21.22	15.69	Dry	15.8	17	14.3	19.1

Table B-1. Performance Monitoring Results - Acid Sump Area EISB

ATI Millersburg Operations, Oregon

Notes:

¹ Well ran dry before stabilizing. Values shown are final readings before well went dry.

² The fall 2014 sampling event was conducted in February 2015.

³ TMW-1 and TMW-4 were abandoned in August 2016 during excavation.

-- = no applicable cleanup standard

µg/L = micrograms per liter

µS/cm = microSiemens per centimeter

CVOC= chlorinated volatile organic compound

DCA= dichloroethane

DCE= dichloroethene

E = estimated value above the calibration range

EISB = enhanced in situ bioremediation

ISV = insufficient sample volume

J = estimated value below reporting limit

mg/L = milligrams per liter

mV= millivolts

NS = not sampled.

ORP = oxidation reduction potential

TCA= trichloroethane

TCE= trichloroethylene

U= not detected above the reporting limit

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

Attachment C

Former Crucible Cleaning Area Groundwater Quality Data

Table C-1. Performance Monitoring Results - Former Crucible Cleaning Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Source Area Well																
			PW-93A																
			Baseline 5/10	12/10	5/11	10/11	6/12	12/12	6/13	12/13	7/14	2/15	6/15	6/16	12/16	7/17	10/17	5/18	10/18
CVOCs																			
1,1,1-TCA	ug/L	200	11,100	1,120	5,970	845	350	19.6	16.7	11.5	10.1	28.2	28.7	18.8	26.6	46.6	29.1	76.7	29.3
1,1-DCA	ug/L	3,700	2,370	9,770	3,380	6,218	3,150 E	185	166	171	83.4	58	83.1	59.2	49.7	105	94	81.3	112
1,2-DCA	ug/L	5	25 U	10 U	25 U	10 U	4 U	2.5 U	2.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	4.00 U	
Chloroethane	ug/L	-	288	263	659	182	6,310 E	1,200 E	1,865	310	243	89.5	175	100	94.9	260	336	446	2,630
Trichloroethene	ug/L	5	16.7 J	29.4	2.13 J	17.4	31.3	2.71	2.54	1.16	5 U	0.25 J	0.2 J	0.16 J	0.16 J	0.62	0.49 J	0.386 J	4.00 U
1,1-DCE	ug/L	7	905	512	785	315	1,280	140	128	16.2	9.77	11.8	17.2	7.54	6.71	14.8	14.9	21.4	13.4
cis-1,2-DCE	ug/L	70	31.9	70.7	26.2	34.4	291	19.1	17.2	1.29	5 U	0.33 J	0.32 J	0.3 J	0.22 J	0.63	0.53	0.302 J	3.46 J
trans-1,2-DCE	ug/L	100	25 U	10 U	25 U	10 U	4 U	2.5 U	2.5 U	0.5 U	5 U	0.5 U	0.5 U	--	--	--	--	--	
Vinyl Chloride	ug/L	2	13.5 J	10 U	25 U	10 U	88.4	41.4	38.3	7.43	5.07	2.49	4.1	2.51	2.52	3.45	5.51	2.88	16.8
Tetrachloroethene	ug/L	5	31.5	5.26 J	14.3	1.18 J	19	3.92	3.12	0.98	5 U	0.32 J	0.35 J	0.22 J	0.44 J	2.18	0.63	0.702	2.49 J
Dissolved Hydrocarbon Gases																			
Methane	ug/L	-	539	664	426	623	1,840	4,610	3,800	6,480	NS	6,650	2,160	NS	3,950	11,100	11,000	11,000	8,400
Ethane	ug/L	-	0.54 J	0.67 J	1.34	0.48 J	0.67	0.74 J	0.72 J	1.54 J	NS	5.92 U	0.127 J	NS	0.8 U	3.03 U	2.85 U	1.0 U	0.38
Ethene	ug/L	-	1.92	1.69 J	1.38	1.54 J	14.2	9.71	9.12	3.9	NS	2.01 J	0.776 J	NS	0.55 J	1.27 J	1.91 J	2.8	3.5
General Chemistry																			
Chloride	mg/L	-	57	61	62	68	75.4	24.7	27.2	25.5	NS	9.22	7.1	8.29	7.95	18.9	13.1	8.86	11
Nitrate-N	mg/L	-	5 U	5 U	5 U	5 U	0.02 U	0.1 U	0.1 U	0.007 U	NS	0.014 J	0.0038 J	0.1 U	0.037 U	0.1 U	0.1 U	0.250 U	0.25 U
Sulfate	mg/L	-	10 U	10 U	10 U	10 U	0.03 U	0.1 U	0.523	0.885	NS	0.1 U	0.198	0.5	0.18 J	0.18 J	0.13 J	1.00 U	1 U
Alkalinity	mg/L	-	128	256	418	516	699	378	315	231	NS	96.9	76.8	86.7	86.7	81.3	95.7	83.0	NS
Total Organic Carbon																			
Total Organic Carbon	mg/L	-	5	152	251	463	671	87.6	54.1	14.3	NS	7.49	7.21	4.28	4.14	NS	NS	NS	NS
Metals																			
Iron	mg/L	-	4	8	35	71	104	27.9	22.2	NS	NS	9.4	7.18	6.51	5.54	NS	NS	NS	NS
Sodium	mg/L	-	29	56	72	89	198	51.6	36.4	27.3	NS	13.6	11.8	10.8	10.1	NS	NS	NS	NS
Parameters																			
ORP	mV	-	28.7	-184.4	23.7	-233.4	-1.2	34.3	33.1	-72.4	28.3	-12.2	-71.2	43.7	-47.4	15.7	3.8	58.6	-20.6
Dissolved Oxygen	mg/L	-	0.86	0.22	0.21	0.21	0.2	0.13	0.22	0.24	0.11	0.3	0.18	0.12	0.14	0.11	0.07	0.13	0.76

Notes:

-- = no applicable cleanup standard

µg/L = micrograms per liter

CVOC = chlorinated volatile organic compound

DCA = dichloroethane

DCE = dichloroethene

E = estimated value above the calibration range

J = estimated value below reporting limit

mg/L = milligrams per liter

NS = not sampled

ORP = oxidation reduction potential

TCA = trichloroethane

U = not detected above reporting limit

Bold indicates that the concentration meets or exceeds the cleanup standard. Refer to Quality Assurance Project Plan for Sitewide Remedial Action Table B-4 for more details (GSI, 2016).

Table C-1. Performance Monitoring Results - Former Crucible Cleaning Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Injection Area Wells																
			PW-100A																
			Baseline 8/10	12/10	5/11	10/11	6/12	12/12	6/13	12/13	7/14	2/15	6/15	6/16	12/16	7/17	10/17	5/18	10/18
CVOCs																			
1,1,1-TCA	ug/L	200	0.99	113	102	84.5	35.3	0.95	0.81	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1,060	1,080	436	0.823
1,1-DCA	ug/L	3,700	5.5	2,250	2,100	1,850	222 E	10.7	10.2	2.78	3.18	2.54	2.2	0.99	1.06	1,680	2,040	1,970	56.7
1,2-DCA	ug/L	5	0.5 U	2.5 U	2.5 U	2.5 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Chloroethane	ug/L	-	0.72	190	178	164	653 E	0.66	0.56	21.1	10.4	4.31	11.5	3.08	3.65	752	1,290	4,790	2,510
Trichloroethene	ug/L	5	43	5.37	5.11	4.81	2.96	0.37 J	0.33 J	0.3	0.5 U	0.5 U	0.5 U	0.73	0.5 U	8.61	10.9	8.54	1.39
1,1-DCE	ug/L	7	6.09	103	99.9	81.4	43.6	1.85	1.78	0.45 J	0.37 J	0.31 J	0.5 U	0.5 U	0.5 U	77.3	128	168	2.40
cis-1,2-DCE	ug/L	70	83.4	57.2	53.1	43.4	8.88	1.22	1.18	1.28	4.92	0.62	0.21 J	12.9	3.27	6.84	9.65	13.7	36.8
trans-1,2-DCE	ug/L	100	12.2	2.5 U	2.5 U	2.5 U	6.31	3.2	3.01	7.84	7.14	6.96	5.83	--	--	--	--	--	--
Vinyl Chloride	ug/L	2	5.18	19.9	16.8	7.64	6.44	1.05	1.04	2.03	4.12	0.97	0.67	14.2	4.43	14	21.2	37.0	30.5
Tetrachloroethene	ug/L	5	7.23	2.99	2.46	1.45	4.14	0.49 J	0.41 J	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	6.77	9.4	10.1	0.982
Dissolved Hydrocarbon Gases																			
Methane	ug/L	-	31.5	625	586	515	2,640	2,555	2,410	6,920	NS	7,860	1,620	NS	3,540	14,000	13,200	2.4	13,000
Ethane	ug/L	-	0.15 J	1.09 J	1.09 J	1.09 J	0.42 J	0.45 J	0.41 J	0.768 J	NS	2.73 J	1.09	NS	3.95	6.73	4.9	15	4.2
Ethene	ug/L	-	0.76 J	5.98	3.54	1.18 J	5.96	5.64	5.65	3.18	NS	2.72 J	0.391 U	NS	7.12	9.86	11.7	12,000	37
General Chemistry																			
Chloride	mg/L	-	12	42	38	26	17.8	15	14.0	13.9	NS	12.3	14.3	12.9	12.5	23.4	21.5	20.1	19.4
Nitrate-N	mg/L	-	5 U	5 U	5 U	5 U	0.02 U	0.1 U	0.10 U	0.01 U	NS	0.03 J	0.03 J	0.1 U	0.1 U	0.1 U	0.250 U	0.250 U	
Sulfate	mg/L	-	10 U	10 U	10 U	10 U	0.03 U	0.1 U	0.10 U	0.03 U	NS	0.88	0.50	2.95	1.36	0.2	0.16 J	1.00 U	1.00 U
Alkalinity	mg/L	-	112	253	282	411	502	444	434	255	NS	221	228	187	178	168	188	181	176
Total Organic Carbon																			
Total Organic Carbon	mg/L	-	13	48	156	222	412	87.3	46.1	4.42	NS	2.39	2.28	1.75	1.85	NS	NS	NS	
Metals																			
Iron	mg/L	-	3.21	11.2	28	33	51.9	24.2	22.9	16	NS	16.1	15.6	11.4	9.79	NS	NS	NS	
Sodium	mg/L	-	11.6	35	44	69	120	67.3	61.2	33.9	NS	31	34.4	30.5	23.7	NS	NS	NS	
Parameters																			
ORP	mV	-	33.1	12.5	9.8	11.2	-0.2	NS	-72.8	-71.1	-49.8	-162.5	-54.1	-32.1	-138.6	-26.1	-54.6	-23.3	-56.2
Dissolved Oxygen	mg/L	-	0.64	0.35	0.35	0.35	0.21	NS	0.65	0.55	0.87	0.18	0.22	0.12	0.13	0.11	0.07	0.05	0.66

Table C-1. Performance Monitoring Results - Former Crucible Cleaning Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Injection Area Wells																
			PW-94A																
			Baseline 5/10	12/10	5/11	10/11	6/12	12/12	6/13	12/13	7/14	2/15	6/15	6/16	12/16	7/17	10/17	6/18	10/18
CVOCs																			
1,1,1-TCA	ug/L	200	39	197	12	156	129 E	153 E	146	260	1,380	1,610	1,830	2,460	2,260	1,430	1,190	1,630	525
1,1-DCA	ug/L	3,700	25.7	125	8.96	81	43.3	60.1	58.2	75.4	118	121	166	187	130	599	522	358	469
1,2-DCA	ug/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	25 U	25 U	2.5 U	5 U	5 U	2.5 U	2.5 U	4.00 U	2.00 U
Chloroethane	ug/L	-	85.5	95.9	36.1	72.8	34.2	35.8	32.5	49.5	41	39.5	71.9	84.6	50.1	134	166	235	151
Trichloroethene	ug/L	5	0.31 J	0.23 J	0.5 U	0.5 U	0.26 J	0.28 J	0.5 U	2.88	25 U	25 U	1.58 J	4.29 J	2.72 J	2.56	3.06	4.00 U	2.49
1,1-DCE	ug/L	7	1.9	11.1	0.23 J	8.12	4.04	5.16	4.99	10.1	71	97.3	90.8	116	110	122	122	154	138
cis-1,2-DCE	ug/L	70	1.2	0.83	0.76	0.84	0.48 J	0.53	0.5 U	3.86	25 U	25 U	2.19 J	5.34	3.28 J	5.62	4.62	4.00 U	2.08
trans-1,2-DCE	ug/L	100	0.5 U	0.5 U	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	0.5 U	25 U	25 U	2.5 U	--	--	--	--	--	--
Vinyl Chloride	ug/L	2	1.7	1.39	0.68	0.81	0.67	0.76	0.71	2.24	25 U	25 U	2.23 J	1.93 J	2.54 J	11.4	4.91	11.6	4.78
Tetrachloroethene	ug/L	5	0.5 U	0.1 J	0.5 U	0.5 U	0.2 U	0.5 U	0.5 U	1.16	25 U	25 U	1.31 J	5.7	1.66 J	2.29 J	2.2 J	4.00 U	2.24
Dissolved Hydrocarbon Gases																			
Methane	ug/L	-	NS	1,120	1,080	890	612	779	840	1,050	NS	1,200	774	NS	1,300	1,980	1,900	3,100	1.0 U
Ethane	ug/L	-	NS	0.72 J	0.34 J	0.18 J	0.17 J	0.13 J	0.32	0.495	NS	0.285 J	0.218 J	NS	0.26	0.6	0.61	1.4	1.0 U
Ethene	ug/L	-	NS	0.32 J	0.51 J	0.51 J	0.25 J	0.67	0.78	1.08	NS	1.04	0.38 J	NS	0.85	3.01	1.19	3.3	1.0 U
General Chemistry																			
Chloride	mg/L	-	13	15	16	20	21.3	13.4	12.2	11.6	NS	10.9	9.31	11.3	9.82	33.3	29.8	21.8	14.6
Nitrate-N	mg/L	-	5 U	5 U	5 U	5 U	0.02 U	0.1 U	0.1 U	0.007 U	NS	0.004 J	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.250 U	0.250 U
Sulfate	mg/L	-	10 U	10 U	10 U	10 U	0.25	0.38	2.13	3.86	NS	1.21	0.431	1.4	2.11	1.1	1.25	1.47	1.00 U
Alkalinity	mg/L	-	174	215	193	164	67.6	89.5	128	109	NS	94.7	82.2	102	109	113	123	98.1	89.0
Total Organic Carbon																			
Total Organic Carbon	mg/L	-	5 U	18	11.3	6.14	2.21	2.32	2.12	1.95	NS	2.11	2.46	2	2.04	NS	NS	NS	NS
Metals																			
Iron	mg/L	-	5.4	5.3	5.5	5.4	5.47	5.35	5.66	5.71	NS	6.66	6	5.34	6.59	NS	NS	NS	NS
Sodium	mg/L	-	32	41	28	19	14.4	14.9	15.3	16.7	NS	14.2	14.2	15.9	16.3	NS	NS	NS	NS
Parameters																			
ORP	mV	-	-66.2	-148.2	-72.2	-190.2	-72.3	-76.3	-78.1	39.7	21.9	-171.6	-100.1	-68.6	-99.1	-78.6	-82.3	-10.0	-70.0
Dissolved Oxygen	mg/L	-	0.36	0.33	0.3	0.26	0.22	0.25	0.32	1.1	0.32	0.17	0.2	0.12	0.12	0.17	0.09	0.06	0.76

Table C-1. Performance Monitoring Results - Former Crucible Cleaning Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Injection Area Wells														
			PW-69A														
			5/11	10/11	6/12	12/12	6/13	12/13	7/14	2/15	6/15	6/16	12/16	7/17	10/17	5/18	10/18
CVOCs																	
1,1,1-TCA	ug/L	200	245	13.4	43.4	127 E	111	145	9.5	103	95.4	60.5	55.4	96.2	117	281	102
1,1-DCA	ug/L	3,700	189	135	56.8	100	97.3	149	11.3	38.3	38	31.5	38.3	84.7	112	143	28.5
1,2-DCA	ug/L	5	5 U	0.5 U	2 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	4.00 U
Chloroethane	ug/L	-	89.1	348	85.8	95.3	76.2	119	6.6	28.3	28.4	19.4	30.2	67.3	86.8	302	54.4
Trichloroethene	ug/L	5	3.96	1.96	2 U	1.37	1.26	1.04	0.18 J	5 U	0.43 J	0.24 J	0.31 J	0.82	0.73	2.00 U	4.00 U
1,1-DCE	ug/L	7	28.4	28.6	5.92	9.73	8.21	13.2	1.25	10.4	8.48	6.28	5.21	14.5	17.4	30.9	8.08
cis-1,2-DCE	ug/L	70	5.2	12.2	2.9 J	4.16	2.11	4.72	1.44	6.07	5.05	2.97	4.19	12.5	10	10.3	4.00 U
trans-1,2-DCE	ug/L	100	5 U	0.5 U	2.9 U	0.5 U	0.5 U	0.5 U	0.5 U	5 U	0.5 U	--	--	--	--	--	--
Vinyl Chloride	ug/L	2	3.8 J	0.43 J	2 U	2.06	1.88	3.19	0.28 J	1.77 J	1.42	1.03	1	1.75	2.26	5.14	4.00 U
Tetrachloroethene	ug/L	5	7.12	4.26	0.5 U	8.55	7.68	5.06	0.48 J	4 J	3.61	2.13	2.77	7.47	6.48	10.8	2.07 J
Dissolved Hydrocarbon Gases																	
Methane	ug/L	-	1,310	1,080	2.8	3,190	2,850	1,030	NS	1,140	994	NS	892	1,680	1,760	3,400	3,100
Ethane	ug/L	-	0.12 J	0.12 J	0.22 J	0.56 J	0.33 J	0.227 J	NS	0.173 J	0.15 J	NS	0.15 J	0.28 J	0.34	1.0 U	1.0 U
Ethene	ug/L	-	0.13 J	0.13 J	0.3 J	0.48 J	0.43	0.417	NS	0.779	0.525	NS	0.2 J	0.38	0.41	1.6	1.0 U
General Chemistry																	
Chloride	mg/L	-	21	25	28.3	5.86	21.5	18.6	NS	14.3	12.1	11.3	28.4	26.9	21.3	19.8	9.16
Nitrate-N	mg/L	-	5 U	5 U	0.02 U	0.1 U	0.1 U	0.007 U	NS	0.007 J	0.1 U	0.09 U	0.1 U	0.1 U	0.1 U	0.250 U	0.250 U
Sulfate	mg/L	-	10 U	10 U	0.11	0.032 J	0.31	0.607	NS	0.2	0.383	0.58	0.47	0.43	0.42	1.00 U	1.00 U
Alkalinity	mg/L	-	101	189	214	158	158	138	NS	96.7	86.7	89.8	93.5	109	119	117	84.3
Total Organic Carbon																	
Total Organic Carbon	mg/L	-	18	13	4.69	4.15	4.78	4.69	NS	3.05	3.09	2.69	2.76	NS	NS	NS	NS
Metals																	
Iron	mg/L	-	5.8	7.1	13.2	9.36	8.81	8.59	NS	6.43	6.08	4.75	3.16	NS	NS	NS	NS
Sodium	mg/L	-	22	27	30.4	24.9	22.8	21.4	NS	17.7	17.9	17.5	10.6	NS	NS	NS	NS
Parameters																	
ORP	mV	-	-117.5	-51.3	-118.5	-125.5	-127.65	37.1	118.6	39.5	-91.2	-59.4	-73.1	-61	-65.3	-53.1	-74.5
Dissolved Oxygen	mg/L	-	0.28	0.18	0.28	0.29	0.36	0.59	0.1	0.25	0.34	0.1	0.1	0.1	0.09	0.04	1.03

Table C-1. Performance Monitoring Results - Former Crucible Cleaning Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Injection Area Wells														
			PW-95A														
			5/11	10/11	6/12	12/12	6/13	12/13	7/14	2/15	6/15	6/16	12/16	7/17	10/17	5/18	10/18
CVOCs																	
1,1,1-TCA	ug/L	200	234	45.2	8.98	175 E	156	132	65.2	582	259	373	149	699	153	26.0	363
1,1-DCA	ug/L	3,700	3.16	45.1	32.6	43.9	41.6	50.2	40.3	79.8	45.8	63.7	36.4	799	275	66.1	155
1,2-DCA	ug/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U
Chloroethane	ug/L	-	21.3	7.86	8.12	16.4	15.3	35.8	44.8	25 U	5.02	11.3	6.3	128	35.6	12.3	69.0
Trichloroethene	ug/L	5	1.9	0.23 J	0.5 U	0.46 J	0.5 U	1.43	0.51	25 U	0.65	0.86	0.58	2.84	1.12	0.320 J	0.638
1,1-DCE	ug/L	7	8.18	12.3	7.11	9.56	9.21	10.5	4.55	43.9	19.9	28.8	14.1	104	49.5	12.2	39.3
cis-1,2-DCE	ug/L	70	2.74	0.5 U	0.5 U	1.49	1.34	5.15	4.08	25 U	2.05	2.71	1.75	9.98	3.33	0.738	1.54
trans-1,2-DCE	ug/L	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	25 U	0.5 U	--	--	--	--	--	--
Vinyl Chloride	ug/L	2	2.1	0.5 U	0.5 U	0.84	0.76	3.16	1.43	25 U	1.04	1.41	0.95	0.76	0.38 J	0.235 J	2.62
Tetrachloroethene	ug/L	5	0.65	0.78	0.5 U	1.67	1.25	1.22	3.27	25 U	0.68	1.06	0.65	2.11	0.84	0.257 J	0.639
Dissolved Hydrocarbon Gases																	
Methane	ug/L	-	58.2	64.2	498	250	348	514	NS	204	154	NS	433	1,420	970	490	900
Ethane	ug/L	-	0.09 U	0.11 U	0.068 U	0.35 U	0.21 J	0.147 J	NS	0.356 U	0.373 U	NS	0.24 U	0.53 U	0.31 U	1.0 U	1.0 U
Ethene	ug/L	-	0.096 U	0.095 U	0.5 J	0.25 J	0.89	1.74	NS	0.429	0.157 J	NS	0.2 J	0.98	0.43	1.0 U	1.7
General Chemistry																	
Chloride	mg/L	-	42	58	69.8	39.8	35.8	23.7	NS	22	26	29	20	21.4	20	16.6	18.5
Nitrate-N	mg/L	-	5 U	5 U	0.33	0.18	0.1 U	0.007 U	NS	0.487	0.588	0.29 U	0.33	0.57	0.57	1.13	0.250 U
Sulfate	mg/L	-	10 U	10 U	1.82	1.64	2.11	2.49	NS	3.5	2.71	2.76 J	3.17	4.11	4.23	4.76	4.27
Alkalinity	mg/L	-	68	109	NS	131	123	131	NS	129	128	140	138	88.3	89.4	74.0	96.6
Total Organic Carbon																	
Total Organic Carbon	mg/L	-	5.46	3.25	1.81	1.53	1.64	1.52	NS	1.83	2.35	2.47	2.63	NS	NS	NS	
Metals																	
Iron	mg/L	-	0.34	0.48	0.367	0.256	1.2	1.6	NS	1.3	0.31	1.82	0.363	NS	NS	NS	
Sodium	mg/L	-	36	41	58.4	46.1	8.94	3.69	NS	3.7	42.9	48.2	46.5	NS	NS	NS	
Parameters																	
ORP	mV	-	-84.2	-129.4	-81.3	-79.3	-81.06	36	-22.5	-154.5	57.7	44.4	-12.4	46.5	50.7	50.6	102.9
Dissolved Oxygen	mg/L	-	0.13	0.13	0.11	0.01	0.1	0.77	0.18	0.17	0.42	0.41	0.25	0.25	0.17	0.06	1.10

Table C-1. Performance Monitoring Results - Former Crucible Cleaning Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Injection Area Wells														
			PW-101A														
			5/11	10/11	6/12	12/12	6/13	12/13	7/14	2/15	6/15	6/16	12/16	7/17	9/17	5/18	10/18
CVOCs																	
1,1,1-TCA	ug/L	200	6.78	5.67	0.3 J	0.5 U	0.5 U	1.25	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.408	
1,1-DCA	ug/L	3,700	591	513	2.99	0.95	0.87	0.75	0.42 J	0.51	1.85	0.51	0.67	2.85	2.89 J	13.7	6.03
1,2-DCA	ug/L	5	1.1 U	1.1 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Chloroethane	ug/L	-	161	142	1.24	0.25 J	0.5 U	0.82	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	23.7	71.3 J	1,340	20.3
Trichloroethene	ug/L	5	3.89	1.84	0.32 J	0.61	0.59	0.5 U	0.17 J	0.5 U	0.44 J	0.28 J	0.71	0.74	0.43 J	0.526	0.458
1,1-DCE	ug/L	7	183	64.8	0.33 J	0.5 U	0.5 U	0.5 U	0.35 J	0.5 U	0.5 U	0.5 U	0.5 U	0.17 J	0.16 J	1.66	0.615
cis-1,2-DCE	ug/L	70	20.1	15.7	0.65	0.32 J	0.5 U	0.5 U	0.29 J	0.32 J	1.57	0.62	1.08	0.87	0.46 J	0.738	0.607
trans-1,2-DCE	ug/L	100	0.5 U	1.1 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	--	--	--	--	--	--	--
Vinyl Chloride	ug/L	2	31.2	26.4	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.26 J	0.52 J	1.83	0.400 U
Tetrachloroethene	ug/L	5	3.89	4.18	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.400 U	0.400 U	
Dissolved Hydrocarbon Gases																	
Methane	ug/L	-	268	218	263	48	46.2	167	NS	121	59.8	NS	230	NS	NS	NS	
Ethane	ug/L	-	0.38 J	0.46 J	0.08 U	0.52 U	0.5 U	0.042 J	NS	0.304 U	0.369 U	NS	0.21 U	NS	NS	NS	
Ethene	ug/L	-	3.11	2.98	0.079 U	0.55 U	0.53 U	0.236 J	NS	0.081 J	0.404 U	NS	0.23 U	NS	NS	NS	
General Chemistry																	
Chloride	mg/L	-	15	18	20.9	18.2	17.1	13.6	NS	7.84	7.34	5.47	18.6	NS	NS	NS	
Nitrate-N	mg/L	-	5 U	5 U	0.02 U	0.1 U	0.1 U	0.142	NS	0.012 J	0.1 U	0.1 U	0.1 U	NS	NS	NS	
Sulfate	mg/L	-	10 U	10 U	4.33	6.35	6.19	5.71	NS	3.89	3.84	3.61	5.23	NS	NS	NS	
Alkalinity	mg/L	-	34	59	67	57.1	56.2	51.7	NS	47.4	45.8	41.9	44.7	NS	NS	NS	
Total Organic Carbon																	
Total Organic Carbon	mg/L	-	5.69	4.65	3.25	3.22	3.1	1.6	NS	1.66	1.79	1.29	1.39	NS	NS	NS	
Metals																	
Iron	mg/L	-	0.78	0.91	1.41	0.964	0.92	0.225	NS	0.184	0.163 J	0.123	0.426	NS	NS	NS	
Sodium	mg/L	-	13.2	12.9	14	12.8	11.1	11.2	NS	9.61	10.4	8.99	10.4	NS	NS	NS	
Parameters																	
ORP	mV	-	52.3	75.5	NS	NS	12.68	13	110.7	-77	70.9	37.4	7.6	46.8	33.5	44.3	16.5
Dissolved Oxygen	mg/L	-	0.45	0.46	NS	NS	0.29	0.2	0.1	0.37	0.37	0.13	0.11	0.19	0.22	0.06	0.42

Table C-1. Performance Monitoring Results - Former Crucible Cleaning Area EISB

ATI Millersburg Operations, Oregon

Parameter	Units	Cleanup Standard	Perimeter Area Wells																
			FW-1																
Baseline 9/10	12/10	5/11	10/11	6/12	12/12	6/13	12/13	7/14	2/15	6/15	6/16	12/16	5/17	11/17	5/18	10/18			
CVOCs																			
1,1,1-TCA	ug/L	200	1,922	1,789	1,403	1,089	379	494	113.2	88.2	186	257	234	298	174	67.1	71.7	NS	445
1,1-DCA	ug/L	3,700	366	351	174	148	456	111	55.1	48.3	316	359	364	440	256	0.5 U	0.5 U	NS	119
1,2-DCA	ug/L	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	25 U	25 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NS	4.00 U
Chloroethane	ug/L	-	38.1	39.2	55.1	42.6	49.8	28.4	20.4	11.3	880	556	519	494	212	306	407	NS	191
Trichloroethene	ug/L	5	3.58	3.01	0.35 J	0.5 U	25 U	25 U	1.6	1.83	1.98	0.5 U	0.5 U	NS	4.00 U				
1,1-DCE	ug/L	7	239	216	168	108	187	76.1	49.3	45.8	70.9	85.6	71.3	81.4	47.1	88.2	103	NS	41.9
cis-1,2-DCE	ug/L	70	9.86	8.77	8.51	6.75	2.55	6.75	5.12	3.36	25 U	25 U	4.59	5.43	3.91	2.64	3.2	NS	2.62 J
trans-1,2-DCE	ug/L	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	25 U	25 U	0.5 U	--	--	0.5 U	0.5 U	NS	--
Vinyl Chloride	ug/L	2	5.89	4.76	2.53	2.67	3.94	1.54	2.59	1.32	17.3 J	25 U	13	11	6.12	5.39	4.1	NS	6.03
Tetrachloroethene	ug/L	5	1.89	1.29	0.53	0.5 U	25 U	25 U	0.92	1.14	0.82	0.5 U	0.5 U	NS	4.00 U				
Dissolved Hydrocarbon Gases																			
Methane	ug/L	-																	
Ethane	ug/L	-																	
Ethene	ug/L	-																	
General Chemistry																			
Chloride	mg/L	-																	
Nitrate-N	mg/L	-																	
Sulfate	mg/L	-																	
Alkalinity	mg/L	-																	
Total Organic Carbon																			
Total Organic Carbon	mg/L	-																	
Metals																			
Iron	mg/L	-																	
Sodium	mg/L	-																	
Parameters																			
ORP	mV	-																	
Dissolved Oxygen	mg/L	-																	

Attachment D
List of Acronyms

List of Acronyms

µg/L	microgram/liter
ATI	ATI Millersburg Operations
CA	chloroethane
COC	constituent of concern
CVOC	chlorinated volatile organic compound
DCA	1,1-dichloroethane
DCE	1,1-dichloroethene
DEQ	Oregon Department of Environmental Quality
DNAPL	dense nonaqueous-phase liquid
EDD	electronic data delivery
EISB	enhanced in situ bioremediation
EPA	U.S. Environmental Protection Agency
FCCA	Former Crucible Cleaning Area
GETS	groundwater extraction and treatment system
GSI	GSI Water Solutions, Inc.
MG	million gallons
mg/L	milligram/liter
PCE	tetrachloroethene
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
ROD	Record of Decision
TCA	1,1,1-trichloroethane
TCE	trichloroethene
TM	technical memorandum
TMW	temporary monitoring well
VC	vinyl chloride

Attachment E
Well Construction Details

Table E-1. Fabrication Area Well Construction Details

ATI Millersburg Operations, Oregon

Station	Well Construction Data					Screen Depth		Screen Elevations		Regulatory Identification	Location Data	
Well ID	Borehole Diameter (inches)	Well Diameter (inches)	TOC Elevations (ft msl)	Stick Up (ft ags)	Bottom of Well Casing (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	Top (ft msl)	Bottom (ft msl)	Date Constructed	Easting	Northing
E-11	4	2	208.23	-0.2	13.45	9	13.5	199.23	194.73	7/7/2009	7534410.70	373474.88
EI-5	4	2	--	-0.5	16.1	11	16	--	--	7/9/2009	--	--
FW-1	12	6	210.26	-	29.5	12	27	198.26	183.26	4/5/2000	7535259.10	372991.90
FW-2	12	6	208.35	-	30.5	13	28	195.35	180.35	4/4/2000	7534684.10	372885.65
FW-3	12	6	206.66	-	21.5	9	19	197.66	187.66	4/3/2000	7534541.83	373230.98
FW-4	12	6	195.37	-	25	7.5	22.5	187.87	172.87	8/4/2000	7535368.47	372468.98
FW-5	12	6	201.86	-	24.2	11.7	21.7	190.16	180.16	8/2/2000	7534391.39	372872.11
FW-6	12	6	207.51	-2.1	20.4	8	18	199.51	189.51	8/3/2000	7534176.99	373575.66
FW-7	12	6	201.60	-0.55	28.5	13.5	28.5	188.10	173.10	3/1/2001	7535592.91	372553.28
I-2	4	2	--	-0.5	13.9	9	15.5	--	--	7/8/2009	--	--
I-3	4	2	--	-0.5	14.3	10	15	--	--	7/8/2009	--	--
MW-01A	-	2	205.20	2.55	19.5	9.5	19.5	195.70	185.70	9/30/1998	7535576.24	372516.82
MW-02A	-	2	204.83	-0.39	19.3	9.3	19.3	195.53	185.53	9/30/1998	7535624.16	372719.94
MW-03A	-	2	207.59	-0.30	19.8	9.8	19.8	197.79	187.79	9/30/1998	7535675.20	372901.19
MW-04A	-	2	204.62	1.66	17.5	7.5	17.5	197.12	187.12	10/1/1998	7535750.20	372698.07
MW-05A	6.5	2	213.98	2.32	26.5	16	26	197.98	187.98	3/25/1999	7535980.41	372689.74
MW-06A	6	2	211.64	-0.38	29.5	19	29	192.64	182.64	3/23/1999	7535955.41	372484.53
MW-07A	8.5	2	200.49	-0.38	19.5	9	19	191.49	181.49	3/24/1999	7535567.91	372290.78
MW-08A	6.5	2	201.23	-0.50	19.5	9	19	192.23	182.23	3/25/1999	7535672.08	372210.57
MW-09A	6	2	210.00	-0.34	34.5	24	34	186.00	176.00	3/24/1999	7535902.29	372314.74
MW-10A	6	2	212.49	2.52	25.5	15	25	197.49	187.49	3/26/1999	7535758.54	372514.74
MW-11A	6	2	211.02	-0.11	25.5	15.5	25.5	195.52	185.52	8/4/1999	7535612.70	372455.36

Table E-1. Fabrication Area Well Construction Details

ATI Millersburg Operations, Oregon

Station	Well Construction Data					Screen Depth		Screen Elevations		Regulatory Identification	Location Data	
Well ID	Borehole Diameter (inches)	Well Diameter (inches)	TOC Elevations (ft msl)	Stick Up (ft ags)	Bottom of Well Casing (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	Top (ft msl)	Bottom (ft msl)	Date Constructed	Easting	Northing
PW-01A	8	4	211.44	2.42	21	9	19	202.44	192.44	5/7/1989	7534477.85	372983.56
PW-03A	8	4	210.50	1.95	22	15	20	195.50	190.50	5/5/1989	7534315.35	372888.77
PW-10	6	2	211.53	2.14	12	7	11	204.53	200.53	10/31/1986	7534200.49	373580.47
PW-11	6	2	208.53	-0.45	17.8	11.8	16.8	196.73	191.73	10/29/1986	7534362.11	373341.62
PW-12	6	2	209.97	1.70	19.2	10.9	17.4	199.07	192.57	10/30/1986	7534562.53	373235.78
PW-13	8	4	207.78	-0.35	16.7	11.8	16.3	195.98	191.48	11/6/1986	7534383.41	373449.95
PW-14 ¹	-	-	209.52	0.43	-	-	-	-	-	-	7534652.85	373546.06
PW-15AR	10	2	206.50	1.85	20.5	10	20	196.50	186.50	9/14/1999	7534474.66	374177.60
PW-16A	8	4	209.97	2.45	29	17	27	192.97	182.97	4/26/1989	7533848.68	373397.11
PW-19A	8	4	210.43	1.75	20	8	18	202.43	192.43	4/20/1989	7533893.47	373151.27
PW-20A	8	4	210.42	2.12	22	10	20	200.42	190.42	4/18/1989	7533987.22	372966.90
PW-30A	8	4	199.75	1.50	17.17	5	15	194.75	184.75	4/5/1989	7535378.89	372499.19
PW-31A	8	4	214.71	2.16	28.2	16.2	26.2	198.51	188.51	4/7/1989	7535619.51	373196.06
PW-32A	8	4	212.56	2.34	21.5	9.5	19.5	203.06	193.06	4/27/1989	7534899.23	373333.59
PW-33A	8	4	212.40	2.40	18.5	11.5	16.5	200.90	195.90	4/13/1989	7534912.44	373764.91
PW-34A	8	4	210.73	2.55	16.1	9	14	201.73	196.73	4/11/1989	7534884.84	374127.42
PW-42A	8	4	209.98	-0.16	22	10	20	199.98	189.98	4/25/1989	7534826.80	373024.19
PW-45A	8	4	211.69	-0.40	24.2	11.7	21.7	199.99	189.99	9/5/1990	7535448.68	372761.69
PW-46A	8	4	209.61	-0.34	23	10.5	20.5	199.11	189.11	9/11/1990	7535246.60	372561.69
PW-68A	10	2	211.63	-0.36	20.5	10	20	201.63	191.63	8/16/1999	7535482.01	372955.44
PW-69A	10	2	209.70	-0.23	20.5	10	20	199.70	189.70	8/20/1999	7535163.23	373020.79
PW-70AR	10	2	210.57	-0.25	20.5	10	20	200.57	190.57	9/16/1999	7535014.30	373225.23

Table E-1. Fabrication Area Well Construction Details

ATI Millersburg Operations, Oregon

Station	Well Construction Data					Screen Depth		Screen Elevations		Regulatory Identification	Location Data	
Well ID	Borehole Diameter (inches)	Well Diameter (inches)	TOC Elevations (ft msl)	Stick Up (ft ags)	Bottom of Well Casing (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	Top (ft msl)	Bottom (ft msl)	Date Constructed	Easting	Northing
PW-71A	10	2	210.06	-0.19	20.5	10	20	200.06	190.06	8/20/1999	7534990.35	373051.27
PW-72A	10	2	210.13	-0.38	20.5	10	20	200.13	190.13	8/18/1999	7535128.89	372874.19
PW-73A	10	2	210.86	-0.40	15.5	5	15	205.86	195.86	8/18/1999	7535270.55	372650.23
PW-73B	10	2	211.23	-0.41	38.2	27.5	37.5	183.73	173.73	8/17/1999	7535270.55	372650.23
PW-74A	10	2	209.81	-0.19	15.5	5	15	204.81	194.81	8/20/1999	7535098.68	372580.44
PW-74B	10	2	209.64	-0.39	35.5	24.8	34.8	184.84	174.84	8/20/1999	7535098.68	372580.44
PW-75A	10	2	197.57	-0.43	19.5	9	19	188.57	178.57	8/20/1999	7535298.17	372233.56
PW-76A	10	2	207.94	2.15	19.5	9	19	198.94	188.94	9/13/1999	7534347.97	373929.23
PW-77A	10	2	209.03	-0.4	21.5	11	21	198.03	188.03	9/14/1999	7534294.43	373757.10
PW-78A	10	2	208.96	-0.45	31	20	30	188.96	178.96	9/13/1999	7534126.15	373610.68
PW-79A	10	2	198.28	-0.45	21	9	19	189.28	179.28	9/10/1999	7533918.47	373475.23
PW-80A	10	2	211.03	2.0	19.5	9	19	202.03	192.03	9/15/1999	7534044.51	373341.90
PW-81A	10	2	208.73	-	18	7.5	17.5	201.23	191.23	9/16/1999	7534755.97	373228.36
PW-82A	10	2	208.64	-0.25	19.5	9	19	199.64	189.64	9/17/1999	7534408.05	373148.15
PW-83A	10	2	210.28	-	22.5	12	22	198.28	188.28	9/20/1999	7534393.47	373051.27
PW-84A	10	2	209.70	-	20.5	10	20	199.70	189.70	8/20/2014	7534629.10	373054.66
PW-85A	10	2	212.85	-	20.5	10	20	202.85	192.85	9/21/1999	7534587.22	372962.73
PW-86A	10	2	208.91	-0.24	25.5	15	25	193.91	183.91	9/20/1999	7534745.55	372899.19
PW-87A	10	2	211.49	1.9	26	15	25	196.49	186.49	9/15/1999	7534905.97	372860.65
PW-88A	10	2	211.89	-	32.5	20.5	30.5	191.39	181.39	9/22/1999	7534724.72	372749.19
PW-89A	10	2	202.40	2.9	15.5	5	15	197.40	187.40	10/4/1999	7534450.76	372811.69
PW-91A	6	2	198.19	-0.5	19.3	9	18.8	189.19	179.39	2/22/2000	7535257.01	372357.52

Table E-1. Fabrication Area Well Construction Details*ATI Millersburg Operations, Oregon*

Station	Well Construction Data					Screen Depth		Screen Elevations		Regulatory Identification	Location Data	
Well ID	Borehole Diameter (inches)	Well Diameter (inches)	TOC Elevations (ft msl)	Stick Up (ft ags)	Bottom of Well Casing (ft bgs)	Top (ft bgs)	Bottom (ft bgs)	Top (ft msl)	Bottom (ft msl)	Date Constructed	Easting	Northing
PW-92A	6	2	208.77	-0.5	20.5	10	20	198.77	188.77	2/22/2000	7534077.85	373159.61
PW-93A	8	4	209.95	0.5	30	7.5	27.5	202.45	182.45	9/21/2007	7535168.19	373072.90
PW-94A	8	4	210.03	0.5	30	7.5	27.5	202.53	182.53	9/21/2007	7535141.84	373030.99
PW-95A	8	4	210.81	0.5	30.0	7.5	27.5	203.31	183.31	9/21/2007	7535182.90	372991.16
PW-98A	4	2	209.15	-0.35	16	11	16	198.15	193.15	7/6/2009	7534423.23	373594.35
PW-99A	4	2	207.44	-0.35	15	10	15	197.44	192.44	7/7/2009	7534497.11	373292.22
PW-100A	4	2	210.34	-	27.3	7	27	203.34	183.34	8/12/2010	7535148.05	373087.94
PW-101A	4	2	210.67	-	25	11	25	199.67	185.67	8/11/2010	7535204.91	373057.24
PZ-1A	8	2	210.82	2.50	18.4	6.4	16.4	204.42	194.42	5/2/1989	7534301.07	373180.84

Notes:¹ PW-14 well log contains only top of casing elevation and ground surface elevation. No other information is present.

- = not available

ft ags = feet above ground surface

ft amsl = feet above mean sea level

ft bgs = feet below ground surface

TOC = top of casing

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